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# ANNALS

OF THE

## QUEENSLAND MUSEUM.

No. 1.

SYNONYMICAL CATALOGUE OF THE LEPIDOPTERA RHOPALOCERA  
(BUTTERFLIES) OF AUSTRALIA, WITH FULL BIBLIOGRAPHICAL  
REFERENCE; INCLUDING DESCRIPTIONS OF SOME NEW SPECIES.

BY

W. H. MISKIN, F.L.S., F.E.S.

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BRISBANE:

JAMES C. BEAL, GOVERNMENT PRINTER, WILLIAM S

1891.







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OF THE

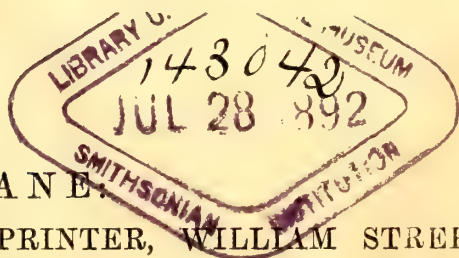
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A SYNONYMICAL CATALOGUE  
OF THE  
**LEPIDOPTERA RHOPALOCERA**  
(BUTTERFLIES)  
OF  
**A U S T R A L I A**  
WITH FULL BIBLIOGRAPHICAL REFERENCE;  
INCLUDING DESCRIPTIONS OF SOME NEW SPECIES.  
BY  
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## P R E F A C E.

FOR many years I have had in contemplation the publishing of a reliable list of the Australian Butterflies known to science, embracing the full synonymy of and reference to each species, and have been steadily accumulating the material necessary to the fulfilment of this object. Want of time, however, but more especially the difficulty of reference to the mass of literature requiring to be consulted, through the former paucity of entomological works in the colonies (a want that has, however, of more recent years been gradually surmounted by the very considerable development of the various local museum scientific libraries), has hitherto proved a bar to my intention.

I now feel that I may with confidence make available to fellow-workers in this branch of zoology the benefit of over twenty years' study of the subject in Queensland and of some experience in other of the colonies, and supply a want that I am sure has been felt.

The only attempt of the kind is the catalogue published some years since by Mr. Geo. Masters, then of the Australian Museum, Sydney, and this was far from being a complete work upon the subject.

It is now thirteen years since the admirable work of Mr. W. F. Kirby was completed by the publication of his "Supplement to the Synonymic Catalogue of the Diurnal Lepidoptera of the World"; and since then many new species have been described, and many others identified as Australian, not before known to occur in this country; it is fully time, therefore, that our known species should be brought up to date, and the work of more recent authors added to that of those already catalogued, and the embodiment of the species of so well defined a region as the Australian continent secured in one list.

I only regret that it is out of my power at the present time to extend my present publication to a full descriptive work on the subject, and make use of the mass of observations that has accumulated in my notebooks upon the life-history of many of the species. This must, however, stand over for a future time.

It is, I suppose, incumbent upon me to offer some remark upon the reason that induces me to adhere to the older arrangement in position of the families, in preference to that adopted by almost



every recent author. I do not, however, intend to enter into an argument here upon the most correct order in which to place them; it will be sufficient for me to say that in following the system that has been familiar to me from childhood I have carefully considered the reasons advanced by various authors in support of the newer arrangement, and my mind has failed to be convinced of a sufficient cause to justify the change.

With the genera I have interfered very little; I have in many instances preferred to retain names which, although not claiming precedence by priority of date, have become so familiar by long use as to make it inexpedient in my opinion to discard them.

Especially with regard to the *HESPERIDÆ* is the arrangement of the genera provisional. I have been unable to refer to the recent work of Mabille,\* Speyer,† and Plotz‡ in the diagnosing of this family.

I declare myself an uncompromising opponent of the species makers, and there are many names still in my list that I felt at the time strongly tempted to sink as synonyms, and some more that I feel convinced will have to be struck out in the future and treated as varietal forms only. A number of species—more especially amongst the *HESPERIDÆ*—to descriptions of which I have been unable to refer, will doubtless prove to be ones that I have since described, so that the total number of species will probably bear considerable reduction.

I cannot avoid here remarking that I think the practice of hastily describing as a new species an insect that the author has seen but a single example of, possessing no local knowledge of the fauna from whence it is derived, is much to be deprecated, as calculated to simply cumber the literature and render the identification of the species troublesome and complicated, consequently retarding rather than advancing the interests of science. But still worse is it when persons entirely ignorant of the literature of the subject, from a mere desire to have their names appear in type, recklessly publish descriptions of alleged new species, regardless of the work of a century, without the possibility of knowing whether the specimen is already described or not; of such it is to be deplored we are unhappily not free.

In giving the localities of the various species in my catalogue, it will be observed that I refer in almost every instance to the

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\* Ann. Soc. Ent. Fr. 1877.

† Stett. Ent. Zeit. 1878.

‡ Stett. Ent. Zeit. 1879.

coast line. It is a peculiarity of our Lepidopterous (Rhopalocera) fauna that it is almost entirely restricted to the coast country ; a very few species, comparatively speaking, frequenting the country beyond the Dividing Range, say 100 miles from the sea, and I do not know of a single species that is not found within fifty miles of the sea.

It will be apparent from the context that I limit my Australian region to the continent of Australia, the island of Tasmania, and a few islands in Torres Straits adjacent to the mainland.

I give a complete Bibliography, and I think it will be found that very few, if any, works containing notices of our fauna have been omitted. Many works are still inaccessible to me, but these comprise almost exclusively European periodicals containing but scattered references, and to but a few species.

The species which are reputed to be Australian, but in support of which the evidence is not conclusive, I include in a list, together with those known to have been located as Australian by mistake, at the end.

W. H. M.

*Brisbane, November, 1890.*





# LIST OF AUTHORS QUOTED IN THIS CATALOGUE,

WITH

## ABBREVIATIONS AND FULL NAMES,

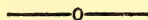


ABB. AND SMITH.—John Abbott and Jas. Edwd. Smith. Lep. of Georgia.  
AURIVILL.—P. O. C. Aurivillius. Kongl. Sv. Vet. Akad. Handl.; Ofv. Vet. Ak.  
Fork.

BATES.—Hy. W. Bates. Jour. Ent.; Trans. L. Soc. Zool.  
BERG.—Johan Andreas Benignus Bergstrasser. Nomencl.  
BILLB.—Gust. Joa. Billberg. Enum. Insect.  
BLANCH.—Emile Blanchard. Voy. Pole Sud.; Hist. Nat. Ins.  
BOIS.—Jean Alphonse Boisduval. Ann. Soc. Ent. Fr.; Faun. Mad.; Gen. et Ind.  
Meth.; Sp. Gen.; Voy. Astr. Lep.; Voy. dans l'Océanie.  
BOIS. AND LEC.—J. A. Boisduval and John E. Leconte. Lep. Am. Sept.  
BOUG.—Baron de Bougainville. Voy. Thet.  
BUTL.—Arthur Gardiner Butler. Ann. N. H.; B. M. Cat. Fab. Lep.; Cat. Sat.  
B. M.; Cist. Ent.; Cruise Curaçoa; Ent.; Ent. M. Mag.; Lep. Ex.; Lep.  
N.Z.; Proc. Z. Soc.; Trans. E. Soc.; Trans. L. Soc. Zool.

CHENU.—Jean Chas. Chenu. Enc. D'Hist. Nat. Pap. Diur.  
CLERCK.—Chas. Alex. Clerck. Icones.  
COX.—H. Ramsay Cox. Entomol.  
CRAM.—Pierré Cramer. Pap. Ex.  
CUVIER.—Geo. Leop. Fred. Cuvier. Tabl. Elem.

DALM.—Johann Wilhelm Dalman. Anal. Ent.; Kong. vet. Acad. Hand.  
DECKENS.—Baron Carl Claus von der Decken. Reisen.  
DE HAAN.—Willem de Haan. Verh. Nat. Ges. Ned. overz. bez.  
DE NIC.—Lionel de Nicéville. Jour. A. Soc. Beng.; Butt. Ind.  
DE PRUN.—L. De Prunner. Lep. Ped.  
DIST.—W. L. Distant. Rhop. Malay.  
DOH.—W. Doherty. Jour. A. Soc. B.  
DON.—Edward Donovan. Ins. China; Ins. India; Ins. N. H.; Nat. Rep.  
DOUBL.—Edwd. Doubleday. Ann. N. H.; Gen. D. L.; List. Lep. B. M.; Stokes  
Aust.  
D. AND H.—Doubleday and Hewitson. Gen. D. L.  
D. H. AND W.—Doubleday, Hewitson, and Westwood. Gen. D. L.  
DRAP.—A. Drapiez. Ann. Sc. Physc. Brux.  
DRUCE.—H. Druce. Proc. Z. Soc.  
DRU.—D. Drury. Ill. Ex. Ent.  
DUP.—Philogene Auguste Joseph Duponchel. Cat. Lep. F.



EDW.—Hy. Edwards. Vic. Nat.  
 ELWES.—H. I. Elwes. Proc. Z. Soc.  
 ENYS.———. Cat. Butt. N.Z.  
 ESCH.—Johann Freiderich Escholtz. Kotzeb Reise.  
 ESP.—Eugene Johann Christoph Esper. Aus. Schmett.; Gesch. Eur. Schmett.; Schmett.  
 FAB.—Johann Christian Fabricius. Ent. Syst.; Gen. Ins.; Ill. Mag.; Mant. Ins.; Syst. Ent.; Sp. Ins.; Wien. Verz.  
 FEISTH.—Joaq. Frc. P. Feisthamel. Rev. Zool.  
 FELD.—Cajetan Felder. Diag. Lep.; Neues Lep.; Reise Nov. Lep.; Sitzb. Ak Wiss. Wien. Math. Nat.; Verh. Zool. Bot. Ges.; Wien. Ent. Mon.  
 FOURC.—Ant. Franc de Fourcroy. Ent. Paris.  
 FORSAY.—R. W. Forsayeth. Trans. E. Soc.  
 FREY.—C. F. Freyer. Neure. Beit. Schmett.  
 FUESS.—J. C. Fuessly. Schweiz. Ins.

GMEL.—Johann Freiderich Gmelin. Syst. Nat.  
 GODT.—Jean Baptiste Godart. Enc. Meth.  
 GODM. AND SALV.—F. du Cane Godman; O. Salvin. Proc. Z. Soc.; Biol. Cent. Am. Rhop.  
 GOEZE.—Johann August Ephriam Goeze. Ent. Beytr.  
 GRAY.—Geo. Robt. Gray. Cat. Lep. Ins. B. M.; Lep. Ins. Nep.  
 GUEN.—A. Guenee. Ann. Soc. Ent. Fr.; Maill. Ruén. Lep.  
 GUER.—Felix Edward Guerin-Meneville. Voy. Coq.; Voy. Fav.  
 GUEST.—E. Guest. Trans. R. Soc. S. Aust.

HERBST.—Johann Freiderich Wilhelm Herbst. Nat. Schmett.  
 HERR.-SCHFF.—Gottlieb August Wilhelm Herrich-Schaeffer. Ex. Schmett.; Schmett. Eur.; Stett. Ent. Zeit.; Syst. Bearb. Schmett. Eur.  
 HEW.—Wm. Chapman Hewitson. Ann. N. H.; Cat. Lyc. B. M.; Descen. Hesp.; Ex. Butt.; Ill. D. Lep.; Jour. L. Soc. Zool.; Trans. E. Soc.  
 HOPFF.—C. H. Hopffer. Pet. Reise Zool.  
 HORSE.—Thomas Horsefield. Cat. Lep. E. I. C.  
 HORSE. AND MOORE.—Thomas Horsefield; Frederick Moore. Cat. Lep. E. I. C.  
 HOUTT.—Mart. Houttuyn. Nat. Hist.  
 HUBN.—Jacob Hubner. Eur. Schmett.; Samml. Ex. Schmett.; Tentamen; Verz. bek. Schmett.; Zutr. Ex. Schmett.

KHEIL.—N. M. Kheil. Rhop. der Insel Nias.  
 KIRB.—W. F. Kirby. Cat. D. L.; Cat. D. L. Supp.; Eur. Butt.  
 KOLL.—V. Kollar. Hug. Kasch.

LANG.—H. C. Lang. Butt. Eur.  
 LATR.—Pierre Andre Latreille. Enc. Meth.; Gen. Crust. Ins.; Hist. Nat. Crust.  
 LEACH.—Wm. Elford Leach. Sam. Comp.; Zool. Misc.  
 LEDER.—Julius Lederer. Verh. Zool. Bot. Ges.  
 LEECH.—J. H. Leech. Proc. Z. Soc.  
 LEW.—John Wm. Lewin. Lep. Ins. N.S.W.  
 LIN.—Carl von Linnè. Joh. Amœn. Acad.; Mus. Ulr.; Syst. Nat.  
 LUC.—Hippolyte Lucas. Lep. Ex.; Rev. Zool.; Sagra. Hist. de Cuba.  
 LUG, T. P.—T. P. Lucas. Proc. L. Soc. N.S.W.; Proc. R. Soc. Q.

MAB.—P. Mabille. Ann. Soc. Ent. Belg.; Bull. Soc. Zool. Fr.; Comp. Rend. Ent. Belg.; Pet. Nouv. Ent.  
 MACLEAY.—Wm. Sharp Macleay. King's Surv. Aust.

- MACLEAY, W.—Wm. Macleay. *Proc. E. Soc. N.S.W.*  
 MARSH. AND DE NIC.—G. F. L. Marshall; Lionel de Nicéville. *Butt. Ind.*  
 MAST.—Geo. Masters. *Proc. L. Soc. N.S.W.*  
 MATH.—Gervase N. Mathews. *Proc. L. Soc. N.S.W.*; *Trans. E. Soc.*  
 MCCOY.—Fredk. McCoy. *Prod. Zool. Vic.*  
 MEIG.—Johann Wilhelm Meigen. *Eur. Schmett.*  
 MEN.—E. Menetries. *Cat. Mus. Petr. Lep.*  
 MEERB.—Nic. Meerburgh. *Afb. Zeldz. Gew.*  
 MEYR.—E. Meyrick. *Ent. Mo. Mag.*; *Proc. L. Soc. N.S.W.*  
 MILL.—Pierre Milliere. *Ann. Soc. Lin. Lyon.*  
 MISK.—W. H. Miskin. *Ent. Mo. Mag.*; *Proc. L. Soc. N.S.W.*; *Proc. R. Soc. Q.*; *Trans. E. Soc.*  
 MONTE.—P. le Montrouzier. *Ann. Sc. Physc. Nat. Lyon.*  
 MOORE.—Frederick Moore. *Ann. N. H.*; *Jour. L. Soc. Zool.*; *Proc. Z. Soc.*; *Lep. Cey.*  
 MULL.—Phil. Ludw. Stat. Müller. *Naturs.*  
 MURRAY.—Richd. P. Murray. *E. Mo. Mag.*; *Proc. E. Soc.*  
  
 NEWM.—Edward Newman. *Brit. Butt.*  
  
 OBER.—C. Oberthur. *Ann. Mus. Gen.*  
 OCHS.—Ferdinand Ochsenheimer. *Schmett. Eur.*  
 OLL.—A. Sidney Olliff. *Ann. N. H.*; *Aust. Butt.*; *Proc. L. Soc. N.S.W.*  
 OLL. AND FORDE.—A. Sidney Olliff; Helena Forde. *Scott's Aust. Lep.*  
  
 PALL.—Peter Simon Pallas. *Reise.*  
 PLOTZ.—C. Plotz. *Stett. Ent. Zeit.*  
 PRITT.—O. v. Prittwitz. *Stett. Ent. Zeit.*  
 PRYER.—H. Pryer. *Rhop. Nihonica.*  
  
 RENNIE.—James Rennie. *Consp.*  
 RØEM.—Joanne Jacabo Røemer. *Gen. Ins.*  
 ROSEN.—Rudolph Rosenstock. *Ann. N. H.*  
 ROTT.—S. A. V. Rottenburg. *Naturf.*  
  
 SALV. AND GODM.—O. Salvin; F. du Cane Godman. *Proc. Z. Soc.*  
 SCOTT.—A. W. Scott. *Trans. E. Soc. N.S.W.*  
 SCUDD.—Samuel H. Scudder. *Butt. E. U. States*; *Proc. Am. Acad. Arts and Sc.*; *Trans. Am. Ent. Soc.*  
 SCHR.—F. Schrank. *Fauna Boica.*  
 SEMP.—Geo. Semper. *Mus. Godff.*; *Reisen. Phillipp.*  
 SHAW.—George Shaw. *Gen. Zool.*; *Nat. Misc.*  
 SMITH AND ABB.—Jas. Edwd. Smith; John Abbott. *Lep. Georgia.*  
 SNELL.—Joh F. Snelleman. *Lep. v. Mid. Sum.*  
 SNELL.—P. C. T. Snellen. *Tijd. Ent.*  
 STAUD.—Otto Staudinger. *Ex. Schmett.*; *Hor. Soc. Ent. Ross.*  
 STEPH.—Jas. Francis Stephens. *Ill. Brit. Ent. Haust.*  
 STOLL.—Caspar Stoll. *Supp. Cram. Pap. Ex.*  
 SULZ.—Johann Heinrich Sulzer. *Gesch. Ins.*  
 SWAIN.—Wm. Swainson. *Cab. Cycl.*; *Phil. Mag.*; *Zool. Ill.*  
 SWIN.—C. Swinhoe. *Jour. Bomb. N. H. Soc.*; *Proc. Z. Soc.*; *Trans. E. Soc.*  
  
 TEP.—J. G. O. Tepper. *Nat. Ins. S. Aust.*; *Trans. R. Soc. S. Aust.*  
 THON.—Theodore Thon. *Ent. Arch.*



THUNB.—Carl Peter Thunberg. Mus. Nat. Ups.

TRIM.—Roland Trimen. Rhop. Afr. Aust.; South Afr. Butt.; Trans. E. Soc.

TURT.—Wm. Turton. Syst. of Nat.

VOLL.—S. C. van. Snellen Vollenhoven. Faun. Ind.-neerl. Mon. Pier.

WALL.—Alfred R. Wallace. Trans. E. Soc.; Trans. L. Soc. Zool.

WALLEN.—H. D. J. Wallengren. Eng. Resa.; Kong. Svens. vet. Akad. Handl.;  
Lep. Caffr.; Svensk. Acad. Forh.; Wien. Ent. Mon.

WALK.—Francis Walker. Ent.

WESTW.—John Obadiah Westwood. Ann. N. H.; Arc. Ent.; Cab. Or. Ent.;  
Intro. Mod. Class Ins.

WOLLAS.—T. V. Wollaston. Ann. N. H.

WOOD-MAS. AND DE NIC.—J. Wood-Mason; Lionel de Nicéville. Jour. A. Soc. B.

ZINK.—J. L. Th. Fr. Zinken. Nova Acta. Ac. Nat. Cur.



# ABBREVIATIONS AND FULL TITLES OF ALL THE WORKS QUOTED IN THIS CATALOGUE.

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*Those works which I have not personally examined are indicated by an asterisk opposite to them. These are principally European periodicals, and generally contain references only to occasional species.*

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- \*AFT. ZELDT. GEW.—Afbeeldingen van Zeeldzaame Gewassen. *Meerb.* 1775.
- \*ANAL. ENT.—Analecta Entomologica. *Dalm.* 1823.
- ANN. MUS. GEN.—Annali del Museo Civico di Storia Naturale di Genova. *Oberthur.* Genoa, 1878.
- \*ANN. SOC. ENT. BELG.—Annales de la Société Entomologique de Belgique. *Mabille.* Brussels, 1878.
- \*ANN. SOC. ENT. FR.—Annales de la Société Entomologique de France, containing articles by *Guenée* and *Boisduval*.
- \*ANN. SOC. LIN. LYON.—Annales de la Société Linnéenne de Lyon. *Mill.* 1861.
- \*ANN. SOC. PHISC. BRUX.—Annales Générales des Sciences Physiques. *Dup.* Bruxelles, 1819.
- \*ANN. SOC. PHISC. NAT. LYON.—Annales des Sciences Physiques et Naturelles, &c., par la Société Royale, &c., de Lyon. *Montr.* 1856.
- ANN. N. H.—Annals and Magazine of Natural History, London, containing articles by *Butler*, *Doubl.*, *Hew.*, *McCoy.*, *Moore*, *Oll.*, *Rosen.*, *Westw.*, *Wollas.*
- ARC. ENT.—Arcana Entomologica. *Westwood.* London, 1841-5.
- AUST. BUTT.—Australian Butterflies. *A. Sidney Olliff.* Sydney, 1889.
- AUS. SCHMETT.—Die Ausländischen oder die Ausserhalb Europa zur Zeit, &c., &c. *Esper.* Erlangen, 1785-98.
  
- B. M. CAT. FAB. LEP.—Catalogue of the Diurnal Lepidoptera\* described by Fabricius, in the Collection of the British Museum. *Butler.* London, 1869.
- \*BIOL. CENT. AMER. RHOP.—Biologia Centrali Americana. *Godm. and Salv.* 1879.
- BRIT. BUTT.—Natural History of British Butterflies and Moths. *Newman.* 1874.
- \*BULL. SOC. ZOOL. FR.—Bulletin de la Société Zoologique de France. *Mab.* Paris, 1876.
- \*BUTT. E. U. STATES.—Butterflies of the Eastern United States. *Scudd.* 1889.
- \*BUTT. EUR.—Rhopalocera Europæ Descripta et Delineata; The Butterflies of Europe, &c. *Lang.* 1885.
- BUTT. IND.—The Butterflies of India, Burmah, and Ceylon. *Marsh. and de Nic.* London.
  
- \*CAB. CYCL.—*Swain.* 1840.
- CAB. OR. ENT.—Cabinet of Oriental Entomology. *Westwood.* London, 1848.
- CAT. BUTT. N.Z.—Catalogue of the Butterflies of New Zealand. *Ennys.* 1880.
- CAT. D. L.—A Synonymic Catalogue of Diurnal Lepidoptera. *Kirby.* London, 1871.
- CAT. D. L. SUPP.—Supplement to same. 1877.
- CAT. LEP. E. I. C.—Catalogue of the Lepidopterous Insects in the Museum of the Hon. East India Company. *Horsefield and Moore.* London, 1858-9.

- CAT. LEP. E. I. C.—A Descriptive Catalogue of the Lepidopterous Insects contained in the Museum of the Hon. East India Company. *Horsefield*. London. 1828.
- \*CAT. LEP. FR.—Catalogue Methodique des Lepidopteres, &c.: a l'Histoire Naturelle de Lepidopteres de France. *Dup.* 1846.
- CAT. LEP. INS. B. M.—Catalogue of Lepidopterous Insects in the Collection of the British Museum. *Gray*. London, 1852.
- CAT. LYCÆN. B. M.—Specimen of a Catalogue of Lycænidae in the British Museum. *Hewitson*. 1862.
- \*CAT. MUS. PETR. LEP.—Enumeratio Corporum Animalium Musei Imperialis Academicæ Scientiarum Petropolitane. *Men.* St. Petersburg, 1855-7.
- CAT. SAT. B. M.—Catalogue of the Satyridæ in the British Museum. *Butler*. 1868.
- CIST. ENT.—Cistula Entomologica sivi Insectorum, &c. *Butler*.
- \*COMPTE. REND. ENT. BELG.—Comptes Rendus des Seances de la Soc. Entom. de Belgique. *Mabille*. 1883.
- \*CONSP.—Alphabet of Insects for the Use of Beginners. *Rennie*. London. 1832.
- CRUISE CURACOA.—Brenchley's Cruise of the "Curaçoa." Appendix: Entomology, Lepidoptera. *A. G. Butler*. 1873.
- \*DIAG. LEP.—*Feld*. 1859.
- DESC. HESP.—Description of new species of Hesperidæ. *Hewitson*. London, 1867-9.
- ENC. D'HIST. NAT. PAP. DIUR.—Encyclopedie D'Histoire Naturelle Papillons. *Chenu*. 1869.
- ENC. METH.—Encyclopédie Methodique Histoire Naturelle Entomologie, &c. Articles by *Godart* and *Latreille*. Paris, 1819-23.
- \*ENG. RESA.—*Wallen*. 1861.
- ENT.—The Entomologist, London, containing articles by *Butler*, *Cox*, *Walker*.
- \*ENT. ARCH.—Entomologisches Archives. *Thon*. Jena, 1828.
- \*ENT. BEYTR.—Entomologische Beitrage zu des Ritter, &c. *Goeze*. Leipzig, 1779.
- ENT. MO. MAG.—The Entomologist's Monthly Magazine, London, containing articles by *Butler*, *Hewitson*, *Meyrick*, *Miskin*, *Murray*.
- \*ENT. PARIS.—Entomologia Parisiensis, &c. *Fourc.* Paris, 1785.
- ENT. SYST.—Entomologia Systematica, &c. *Fabricius*. 1793-4.
- \*ENUM. INS.—Enumeratio Insectorum in Museo Auctoris. *Billb.* Holmiæ. 1820.
- EUR. BUTT.—A Manual of European Butterflies. *Kirby*. London, 1862.
- \*EUR. SCHMETT.—Systematische Beschreibung der Europäischen Schmetterlinge. *Meigen*. Leipzig, 1829-32.
- \*EUR. SCHMETT.—Geschichte Europaischer Schmetterlinge Gesammelt. *Hubner*. Augsburg, 1798-1803.
- EX. BUTT.—Illustrations of new species of Exotic Butterflies. *Hewitson*. London, 1851-71.
- \*EX. SCHMETT.—Exotische Schmetterlinge. *Staud.* 1885.
- EX. SCHMETT.—Sammlung neuer oder wenig bekannter ausser Europaischer Schmetterlinge. *Herrich-Schaeffer*. Regensburg, 1850-58.
- \*FAUN. BOICA.—Fauna Boica. *Schr.* 1801.
- \*FAUN. IND-NEERL. MON. PIER.—*Voll.* 1865.
- \*FAUN. MAD.—Faune Entomologique de Madagascar, &c. *Boisduval*. Paris, 1833.
- \*GEN. CRUST. INS.—Genera Crustaceorum et Insectorum, &c. *Latreille*. Paris, 1806-9.
- GEN. D. L.—The Genera of Diurnal Lepidoptera. *Doubleday*, *Hewitson*, and *Westwood*. London, 1846-52.



- \*GEN. ET IND. METH.—Genera et Index Methodicus Europæorum Lepidopterorum. *Boisduval*. 1840.
- GEN. INS.—Genera Insectorum. *Rœmer*. 1789.
- \*GEN. INS.—Genera Insectorum, &c. *Fabricius*. 1776.
- \*GEN. ZOOL.—General Zoology of Systematic Natural History. *Shaw*. 1806.
- \*GESCH. EUR. SCHMETT.—Die Europäischen Schmetterlinge, &c. *Esp.* Leipzig, 1806-18.
- \*GESCH. INS.—Abgekürzte Geschichte der Insecten nach dem Linnæischen System. *Sulzer*. 1776.
- \*HIST. NAT. CRUST.—Histoire Naturelle, Générale et particulière des Crustacés et des Insectes, &c. *Latreille*. Paris, 1802-5.
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- \*HOR. SOC. ENT. ROSS.—Horæ Societatis Entomologicæ Rossicæ. *Staud.* St. Petersburg, 1875.
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## CATALOGUE

OF THE

## LEPIDOPTERA RHOPALOCERA

OF

A U S T R A L I A.

*Those species with which I am acquainted by name and description only, are denoted by an asterisk prefixed to the name; the remainder, with very few exceptions, are contained in my own collection.*

# RHOPALOCERA.

Family I., **PAPILIONIDÆ**, *Leach.*

Sam. Comp. p. 234 (1819); *Swain.*, Phil. Mag. ser. ii. vol. i. p. 187 (1827); *Westw.*, Introd. Mod. Class. Ins. ii. p. 347 (1840); *Bates*, Jour. Ent. i. p. 218 (1862); *l.c.* ii. p. 177 (1864); *Moore*, Lep. Cey. i. p. 116 (1881); *Marsh and de Nic.*, Butt. Ind. i. p. 18 (1882); *Dist.*, Rhop. Malay. p. 283 (1882-6).

Sub-Family I., PAPILIONINÆ, *Swainson*.

Cab. Cycl. p. 87 (1840); *Bates*, Jour. Ent. ii. p. 177 (1864).

Genus 1, *ORNITHOPTERA*, Bois.

Voy. Astr. Lep. p. 33 (1832); Sp. Gen. i. p. 173 (1836); *Doubl.*, Gen. D. L. p. 3 (1846-50); *Wall.*, Trans. Lin. Soc. xxv. p. 35 (1865); *Moore*, Lep. Ceylon. i. p. 154 (1881); *Dist.*, Rhop. Malay. p. 325 (1882-6).

1. **O. Poseidon**, *Doubl.*, Ann. N. Hist. xix. p. 173 (1847); Gen. D. L. p. 3, 4 (1846-50); *Westw.*, Cab. Or. Ent. t. 11 ♂ (1848); *Kirb.*, Cat. D. L. p. 518 (1871). Darnley Island.
  2. **O. Pronomus**, *Gray*, Cat. Lep. Ins. B. M. i. p. 2, n. 3, t. 1, f. 1, 2 (1852); *Kirb.*, Cat. D. L. p. 517 (1871); *Semp.*, Cat. Mus. Godf. xiv. Lep. p. 41 (1878); *Mathew*, Proc. L. Soc. N.S.W. x. p. 262 (1885); Trans. E. Soc. p. 168 (1888). Cape York, Thursday Island.
- O. POSEIDON, ♀ *Westw.* (*nec Doubl.*), Cab. Or. Ent. p. 29, t. 14 (1848).

3. **O. Cassandra**, *Scott*, Trans. E. Soc. N.S.W. i. p. 131, t. 10 (1866); *l.c.* ii. p. 49 (1869); *Kirb.*, Cat. D. L. p. 517 (1871); *Bull.*, Cruise Curaçoa, p. 474, t. 50 (1873); *Semp.*, Cat. Mus. Godff. xiv. Lep. p. 41 (1878). Mackay to Cooktown.
- ♀ **O. EUPHORION**, *Gray*, Cat. Lep. Ins. B. M. i. p. 4, n. 6, t. 2, f. 3 (1852).
4. **O. Richmondia**, *G. R. Gray*, Cat. Lep. Ins. B. M. i. p. 2, n. 2, t. 2, f. 1, 2 (1852); *Kirb.*, Cat. D. L. p. 517 (1871); *Semp.*, Cat. Mus. Godff. xiv. Lep. p. 41 (1878). Richmond River to Maroochy River.
- Genus 2, *PAPILIO*, *Lin.*
- Syst. Nat. i. 2, p. 744 (1767); *Latr.*, Hist. Nat. Crust. Ins. xiv. p. 108 (1805); *Enc. Meth.* ix. p. 9 (1819); *Bois.*, Sp. Gen. i. p. 183 (1836); *Doub.*, Gen. D. Lep. p. 5 (1846); *Trim.*, Rhop. Afr. Aust. p. 11 (1862); *Dist.*, Rhop. Malay. p. 324 (1882-6).
1. **P. Erectheus**, *Don.*, Ins. N. H. t. 15 (1805); *Bois.*, Sp. Gen. i. p. 215, n. 31 (1836); *Kirby*, Cat. D. L. p. 548 (1871); *Semp.*, Cat. Mus. Godff. xiv. Lep. p. 42 (1878); *Math.*, Trans. Ent. Soc. L. p. 172 (1888); *Oll.*, An. Mag. N. H. p. 359 (1888); *Proc. Lin. Soc. N.S.W.* 2 ser. vol. iii. p. 1250 (1888). Sydney to Cape York, and westerly to Darling Downs.
- P. EREC. ET ÆGEUS**, *Godt.*, *Enc. Meth.* ix. p. 31, 32, n. 15, 17 (1819); *Bois.*, *Voy. Astr. Lep.* p. 38, n. 1, 2 (1832).
- NESTEROIDES EREC. ET ÆG.**, *Hub.*, *Samm. Ex. Schmett.* (1816-1836).
- ♀ **P. ÆGEUS**, *Don.*, Ins. N. H. t. 14 (1805).
2. **P. Egiptius**, *Misk.*, Trans. Ent. Soc. L. p. 451 (1876); *Kirb.*, Cat. D. L. Sup. p. 812 (1877). Cardwell, Johnstone Ri., Cairns.
3. **P. Ormenus**, *Guer.*, *Voy. Coq.* t. 14, f. 3 (1829); *Bois.*, *Voy. Astr. Lep.* p. 39, n. 4 (1832); *Sp. Gen.* i. p. 214, n. 30 (1836); ? *Montr.*, *Ann. Sc. Phy. Nat. Lyon.* p. 394 (1856); *Wall.*, *Trans. Lin. Soc.* xxv. p. 55, n. 71, t. 3 (1865); *Kirb.*, Cat. D. Lep. p. 547 (1871). Cape York, N. Guinea.
- var. a.* **P. AMANGA**, *Bois.*, *Voy. Astr. Lep.* p. 39, n. 3 (1832); *Sp. Gen.* i. p. 216, n. 32 (1836).
- ♀ **P. ONESIMUS**, *Hew.*, *Ex. Butt.* ii. Pap. t. 3, f. 8 (1858).



? *P. GODARTII*, ♀ *Montr.*, Ann. Sc. Phy. Nat. Lyon. p. 398 (1856).

Two examples of this species, both females, have been taken at Cape York; one is in my collection.

4. *P. Anactus*, *Macl.*, King's Surv. Aust. ii. App. p. 458, n. 134 (1827); *Bois.*, Sp. Gen. i. p. 219, n. 37 (1836); *West.*, Arc. Ent. ii. t. 52, f. 3 (1843); *Kirb.*, Cat. D. L. p. 548 (1871); *Semp.*, Cat. Mus. Godf. xiv. Lep. p. 43 (1878); *Math.*, Trans. Ent. Soc. L. p. 176, t. vi. f. 2 (1888).  
Sydney to Mackay.
5. *P. Capaneus*, *Westw.*, Arc. Ent. ii. p. 15, t. 52, f. 1, 2 (1843-5); *Kirb.*, Cat. D. L. p. 545 (1871); *Semp.*, Mus. Godf. xiv. Lep. p. 42 (1878).  
Richmond River to Cape York, Thursday Island, N. Guinea.  
*P. INDICATUS*, *Butl.*, Ann. Nat. Hist. (4) xviii. p. 248, n. 92 (1876); *Kirb.*, Cat. D. L. Sup. p. 813 (1877); *Mathew.*, Trans. Ent. Soc. p. 170, t. vi. f. 3, 3a, 3b (1888).
6. *P. Canopus*, *Westw.*, Ann. Nat. Hist. ix. p. 38 (1842); *Arc. Ent.* ii. p. 81, t. 68 (1843-5); *Kirb.*, Cat. D. L. p. 545 (1871).  
Port Darwin.
7. *P. Ulysses*, *Lin.*, Syst. Nat. i. p. 462, n. 20 (1758); *Mus. Ulr.* p. 201 (1764); *Syst. Nat.* i. 2, p. 748, n. 21 (1767); *Clerck.*, Icones t. 23, f. 1 (1764); *Fab.*, Syst. Ent. p. 450, n. 33, 35 (1775); *Cram.*, Pap. Ex. ii. t. 121, A. B. (1779); *Fab.*, Sp. Ins. p. 13, 14, n. 53, 54 (1781); *Mant. Ins.* p. 7, n. 58, 60 (1787); *Ent. Syst.* iii. p. 23, n. 67, 68 (1793); *Don.*, Ins. India ♂ t. 21, f. — (1800); *Godt.*, Enc. Meth. ix. p. 165, n. 110, t. 6, f. 4 (1819); *Bois.*, Sp. Gen. i. p. 202, n. 15 (1836); *Kirb.*, Cat. D. L. p. 548-9 (1871); *l. c.* Sup. p. 810 (1877); *Semp.*, Mus. Godf. xiv. Lep. p. 43 (1878); *Butl.*, B. M. Cat. Fab. Lep. p. 254 (1869).  
Cardwell to Cape York, Thursday Island, N. Guinea, Malay Ar'ipelago.
- ♀ *P. DROMEDES*, *Lin.*, Syst. Nat. i. p. 462, n. 22 (1758); *Mus. Ulr.* p. 203 (1764); *Syst. Nat.* i. 2, p. 749, n. 23 (1767); *Cram.*, Pap. Ex. ii. t. 122, A. (1779); *Esp.*, Aus. Schmett. t. 47, f. 1 (1785).  
*P. TELEMACHUS*, *Montr.*, Ann. Sc. Physc. Nat. Lyon. p. 401 (1856).  
*P. PENELOPE*, *Wall.*, Trans. Lin. Soc. xxv. p. 44, n. 32 (1865).  
*P. AUTOLYCUS*, *Feld.*, Reise Nov. Lep. i. p. 114, n. 86 (1865).

- P. TELEGONUS, *Feld.*, Wien. Ent. Mon. iv. p. 226, n. 73 (1860); *Reise Nov. Lep. i.* p. 116, n. 87, t. 19, f. a-c (1865).
- P. JOESA, *Butl.*, Entom. vi. p. 348 (1869); *Lep. Ex. i. t. 8, f. 1, 2* (1870).
8. P. *Sthenelus*, *Macl.*, King's Surv. Aust. ii. p. 457, n. 133 (1827); *Bois.*, Sp. Gen. i. p. 239, n. 62 (1836); *Kirb.*, Cat. D. L. p. 543 (1871); *Semp.*, Mus. Godf. xiv. Lep. p. 42 (1878); *Tepper*, Trans. R. Soc. S. Aust. iv. p. 26 (1882); *Math.*, Trans. Ent. Soc. p. 169 (1888). Adelaide to Cape York, N. Guinea.
9. P. *Sarpedon*, *Lin.*, Syst. Nat. i. p. 461, n. 14 (1758); *Mus. Ulr.* p. 196 (1764); *Syst. Nat. i. 2, p. 747, n. 15* (1767); *Fab.*, Syst. Ent. p. 447, n. 21 (1775); *Cr.*, Pap. Ex. ii. t. 122 D. E. (1779); *Fab.*, Sp. Ins. p. 8, n. 28 (1781); *Esp.*, Aus. Schmett. t. 8, f. 2 (1785); *Fab.*, Mant. Ins. p. 4, n. 30 (1787); *Ent. Syst. iii. p. 14, n. 41* (1792); *Hubn. (Zetides, S.)*, Samml. Ex. Schmett. (1816-41); *Godt.*, Enc. Meth. ix. p. 46, n. 62 (1819); *Bois.*, Voy. Astr. Lep. p. 44, n. 12 (1832); *Swain. (Chlorisses, S.)*, Zool. Ill. Ins. ii. t. 89 (1833); *Bois.*, Sp. Gen. i. p. 235, n. 57 (1836); *Gray*, Cat. Lep. Ins. B. M. i. p. 23, n. 135, t. 4, f. 1 (1852); *Kirb.*, Cat. D. L. p. 559 (1871); *l.c. Sup.* p. 811 (1877); *Semp.*, Mus. Godf. xiv. Lep. p. 44 (1878); *Oll.*, Ann. Nat. Hist. p. 357, t. xx. f. 1 (1888); *Dist.*, Rhop. Malay, p. 339, t. 32, f. 6 (1882-86); *Butl.*, B. M. Cat. F. L. p. 242 (1869). Sydney to Cape York, N. Guinea. Malay Ar'ipelago, India, Ceylon.
- P. DEMOPHON, *Meerb.*, Afb. Zeldz. Gew. t. 9 (1775).
- P. DEMOPHOON, *Shaw*, Gen. Zool. vi. 1, p. 208, t. 64 (1806).
- P. ANTHEDON, *Feld.*, Verh. Zool. Bot. Ges. xiv. p. 305, n. 217, p. 350, n. 124 (1864).
- P. CHOREDON, *Feld.*, Verh. Zool. Bot. Ges. xiv. p. 306, n. 218, p. 350, n. 123 (1864).
- P. TEREDON, *Feld.*, *l.c.* p. 305, n. 215 (1864); *Reise Nov. Lep. i. p. 61, n. 47* (1865); *Moore (Dalchina, T.)*, Lep. Cey. p. 143, t. 62, f. 1a, b (1880-81).
- P. MILON, *Feld.*, *Reise Nov. Lep. i. p. 62, n. 48* (1865).
- P. MILETUS, *Wall.*, Trans. Lin. Soc. xxv. p. 65, t. 7, f. 2 (1865).

- P. *MOLUCCENSIS*, *Wall.*, *l.c.* p. 65, n. 110 (1865).
10. **P. *Lycaon***, *Westw.*, *Arc. Ent.* ii. p. 15 (1843); *Feld.*, *Reise Nov. Lep.* i. p. 68, n. 52 (1865); *Kirb.*, *Cat. D. L.* p. 560 (1871); *Semp.*, *Mus. Godf.* xiv. *Lep.* p. 46 (1878); *Math.*, *Trans. Ent. Soc.* p. 177 (1888); *Bois.*, MSS.
11. **P. *Ægistus***, *Lin.*, *Syst. Nat.* i. 2, p. 754, n. 48 (1767); *Joh. Amcæn. Acad.* vi. p. 401, n. 49 (1764); *Cram.*, *Pap. Ex.* iii. t. 241 C. D. (1782); *Godt.*, *Enc. Meth.* ix. p. 47, n. 64, t. 4, f. 7 (1819); *Bois.*, *Sp. Gen.* i. p. 231, n. 50 (1836); *Kirb.*, *Cat. D. L.* p. 560 (1871).
12. **P. *Agamemnon***, *Lin.*, *Syst. Nat.* i. p. 462, n. 21 (1758); *Mus. Ulr.* p. 202 (1764); *Syst. Nat.* i. 2, p. 748, n. 22 (1767); *Fab. Syst. Ent.* p. 455, n. 51 (1775); *Sp. Ins.* p. 20, n. 81 (1781); *Mant. Ins.* p. 10, n. 72 (1787); *Ent. Syst.* iii. p. 33, n. 28 (1793); *Esp.*, *Aus. Schm.* t. 46, f. 1-3 (1785-98); *Don.*, *Ins. China*, t. 27, f. 2 (1798); *Godt.*, *Enc. Meth.* ix. p. 46, n. 63, t. 7, f. 7 (1819); *Bois.*, *Sp. Gen.* i. p. 230, n. 49 (1836); *Butl.*, *B. M. Cat. Fab. Lep.* p. 242 (1869); *Kirb.*, *Cat. D. L.* p. 560 (1871); *l.c. Sup.* p. 811 (1877); *Salv. - Godm.*, *Proc. Zool. Soc.* p. 148 (1877); *Semp.*, *Mus. Godf.* xiv. *Lep.* p. 45 (1878); *Ober.*, *Ann. Mus. Gen.* xii. p. 453, n. 9 (1878); *Moore (Zetides, A.)*, *Lep. Cey.* p. 145, t. 63, f. 2, 2a (1880-81); *Dist.*, *Rhop. Malay*, p. 363, t. 32, f. 7 (1882-86),
- P. *DORYLAS*, *Sulz.*, *Gesch. Ins.* t. 13, f. 3 (1776).
- P. *ÆGISTUS*, *Cram. (nec Lin.)*, *Pap. Ex.* ii. t. 106, C. D. (1779); *Montr.*, *Ann. Sc. Phys. Nat. Lyon.* p. 400 (1856).
- P. *PLISTHENES*, *Feld.*, *Reise Nov. Lep.* i. p. 70, n. 53 (1865).
13. **P. *Macleaynus***, *Leach*, *Zool. Misc.* i. t. 5 (1814); *Godt.*, *Enc. Meth.* ix. p. 47, n. 65 (1819); *Hubn. (Iphiclidides, M.)*, *Zutr. Ex. Schm.* f. 501, 562 (1825); *Bois.*, *Sp. Gen.* i. p. 229, n. 48 (1836); *Voy. Astr. Lep.* p. 42, n. 9 (1832); *Kirb.*, *Cat. D. L.* p. 561 (1871); *Semp.*, *Mus. Godf.* xiv. *Lep.* p. 45 (1878); *Oll.*, *A. and M. Nat. Hist.* p. 358, t. xx. f. 2, 2a (1888).
- Sydney to Cape York, Thursday Island, N. Guinea.
- Cardwell, Cape York, Molucca.
- Mackay to Cape York, Malay Ar'ipelago, India, Ceylon.
- Tasmania, Victoria, and along eastern coast as far north as Johnstone River.



- P. SCOTTIANUS, *Feld.*, Verh. Zool. Bot. Ges. xii. p. 489, n. 160 (1862); *Reise Nov. Lep.* i. p. 73, n. 56 (1865).
14. **P. Leosthenes**, *Doubl.*, Ann. Nat. Hist. xviii. p. 372 (1846); *Gray*, Cat. Lep. Ins. B. M. i. p. 30, n. 142, t. 3, f. 1 (1852); *Kirb.*, Cat. D. L. p. 558 (1871); *Semp.*, Mus. Godf. xiv. Lep. p. 44 (1878). From northern part of N. S. Wales to as far north as Mackay.
15. **P. Parmatus**, *Gray*, Cat. Lep. Ins. B. M. i. p. 30, n. 141, t. 3, f. 2 (1852); *Kirb.*, Cat. D. L. p. 557 (1871); *Semp.*, Mus. Godf. xiv. Lep. p. 43 (1878). Mackay, Cape York, N. Guinea.
- P. PHERECRATES, *Feld.*, *Reise Nov. Lep.* i. p. 56, n. 43 (1865).
- \*16. **P. Liris**, *Godt.*, Enc. Meth. ix. p. 73, n. 132 (1819); *Bois.*, Sp. Gen. i. p. 269, n. 92 (1836); *De Haan.*, Verh. Nat. Ges. Ned. overz. Bez. p. 38, t. 4, f. 3 (1840) ♀; *Doubl.*, Gen. D. L. p. 9, n. 24 (1846-50); *Kirb.*, Cat. D. L. p. 534 (1871); *Gray*, Cat. Lep. Ins. B. M. i. Pap. p. 11 (1852). N. W. Australia, Timor.
- P. MACKLOTTI, *De Haan.*, MSS.
- \*17. **P. Leodamas**, *Wall.*, Trans. L. Soc. xxv. p. 43, n. 25, t. 5, f. 2 (1865); *Kirb.*, Cat. D. L. p. 535 (1871). Rockingham Bay, N. Guinea.
- P. GODARTIANUS, *Luc.*, Rev. Zool. p. 129, t. 10, f. 1 (1852).
18. **P. Polydorus**, *Lin.*, Syst. Nat. i. 2, p. 746, n. 10 (1767); *Joh. Amœn. Acad.* vi. p. 401, n. 50 (1764); *Clerck.*, Icones, t. 33, f. 2 (1764); *Fab.*, Syst. Ent. p. 466, n. 15 (1775); *Sp. Ins.* p. 6, n. 20 (1781); *Ent. Syst.* iii. p. 9, n. 26 (1793); *Esp.*, Aus. Schmett. t. 5, f. 2 (1785-98); *Godt.*, Enc. Meth. ix. p. 71, n. 130 (1819); *Hubn. (Menelaides, P.)*, Samml. Ex. Schmett. ii. t. 101 (1816-36); *Bois.*, Sp. Gen. i. p. 267, n. 90 (1836); *Doub.*, Gen. D. L. p. 9, n. 18 (1846-50); *Gray*, Cat. Lep. Ins. B. M. i. Pap. p. 9 (1852); *Butl.*, B. M. Cat. Fab. Lep. p. 258 (1869); *Kirb.*, Cat. D. L. p. 535 (1871); *Semp.*, Mus. Godf. xiv. Lep. p. 42 (1878); *Ober.*, Ann. Mus. Gen. p. 453, n. 8 (1878). Cardwell to Cape York, Molucca, Celebes.
- P. LEOBOTES, *De Haan.*, Verh. Nat. Ges. overz. Bez. p. 38, t. 6, f. 3 (1840).
- P. POLYPHONTES, *Bois.*, Sp. Gen. i. p. 268, n. 91 (1836).
- P. ADAMAS, *Zink.*, Nova. Acta. Ac. Nat. Cur. xiv. p. 144 (1831).

Genus 3, *EURYCUS*, Bois.

Sp. Gen. i. p. 391 (1836); *Doubl.*, Gen. D. Lep. p. 24 (1847).

1. **E. Cressida**, *Fab.* (*Pap.*, C.), Syst. Ent. p. 448, n. 24 (1775); *Sp. Ins.* p. 27, n. 156 (1781); *Mant. Ins.* p. 17, n. 178 (1787); *Ent. Syst.* iii. p. 20, n. 62, 63 (1793); *Don.*, Ins. N. Holland, t. 12, f. 2 (1805); *Godt.*, Enc. Meth. ix. p. 76, n. 145 (1819); *Bois.*, Voy. Astr. Lep. p. 45, n. 13 (1832); *Hubn.* (*Nesteroides*, C.), Zutr. Ex. Schmett. f. 841, 842 (1837); *Bois.*, Sp. Gen. i. p. 392 (1836); *Chenu.*, Enc. D'Hist. Nat. Pap. Diur. p. 41, f. 120 (1869); *Kirb.*, Cat. D. L. p. 514 (1871); *Semp.*, Mus. Godf. xiv. Lep. p. 41 (1878); *Math.*, Trans. Ent. Soc. p. 159, t. vi. f. 12 (1888).  
♀ **P. HARMONIA**, *Fab.*, Ent. Syst. iii. 1, p. 20, n. 63 (1797); *Don.*, Ins. N. Holl. t. 12, f. 1 (1805); *Bois.*, Sp. Gen. i. p. 393 (1836).  
**P. HARMONIDES**, *Godt.*, Enc. Meth. ix. p. 76, n. 146 (1819); *Bois.*, Voy. Astr. Lep. p. 45, n. 14 (1832).  
**CRESSIDA HELICONOIDES**, *Swain.*, Zool. Ill. Ins. ii. t. 94 (1833).  
♀ **E. TROILUS**, *Butl.*, Ann. Nat. Hist. (4) xviii. p. 247, n. 27 (1876).

Sub-Family II., PIERINÆ, *Swain.*

- Cab. Cycl.* p. 87 (1840); *Bates*, Jour. Ent. ii. p. 177 (1864); *Moore*, Lep. Cey. i. p. 116 (1881); *Marsh and de Nic.*, Butl. Ind. i. p. 18 (1882); *Dist.*, Rhop. Malay, p. 283 (1882-6).  
**PIERIDÆ**, *Dup.*, Cat. Lep. Fr. p. 28 (1846); *Doubl.*, Gen. D. Lep. p. 32 (1847); *Trim.*, Rhop. Afr. Aust. p. 24 (1862).  
**PIERIDES**, *Westw.*, Introd. Mod. Class. Ins. p. 349 (1840); *Voll.*, Faun. Ind.-néerl. Mon. Pier. p. 1 (1865).

Genus 1, *ELODINA*, *Feld.*

*Reise Nov. Lep.* i. p. 215 (1865); *Wall.*, Trans. Ent. Soc. 3rd ser. iv. p. 318 (1867).

1. **E. Angulipennis**, *Luc.* (*Ter. A.*), Rev. Zool. p. 431 (1852); *Wall.*, Trans. Ent. Soc. 3rd ser. iv. p. 319, n. 5 (1867); *Kirb.*, Cat. D. L. p. 440 (1871); *Semp.*, Mus. Godf. xiv. Lep. p. 33 (1878); *Math.*, Trans. Ent. Soc. p. 154 (1888).  
**PIER. PALLENE**, *Hew.*, Ex. Butl. i. Pier. t. 2, f. 8, 9 (1853).

Victoria, N. S. Wales, Queensland as far north as Mackay.

2. **E. Egnatia**, *Godt. (Pier. E.)*, Enc. Meth. ix. p. 138, n. 63 (1819); *Bois. (Ter. E.)*, Sp. Gen. i. p. 678, n. 42 (1836); *Chenu. (Ter. E.)*, Enc. D'Hist. Nat. Pap. Diur. p. 160, f. 148 (1857); *Kirb.*, Cat. D. L. p. 440 (1871); *l.c.* Supp. p. 789 (1877); *Semp.*, Mus. Godf. xiv. Lep. p. 33 (1878); *Ober.*, Ann. Mus. Gen. xii. p. 454, n. 13 (1878).
- PIERIS CIRRA, *Bois.*, Voy. Astr. Lep. p. 58, t. 2, f. 7 (1832).
- P. PADUSA, *Hew.*, Ex. Butl. i. Pier. t. 2, f. 10, 11 (1853); *Wall. (El. P.)*, Trans. Ent. Soc. 3rd ser. ix. p. 319, n. 6 (1867).
- E. HYPATIA, *Feld.*, Reise Nov. Lep. i. p. 216, n. 233 (1865).
- E. THERASIA, *Feld.*, *l.c.* 215, n. 232 (1865).
- E. BOURUENSIS, *Wall.*, Trans. Ent. Soc. 3rd ser. iv. p. 319, n. 4 (1867).
3. **E. Parthia**, *Hew. (Pier. P.)*, Ex. Butl. i. Pier. t. 2, f. 12, 13 (1853); *Kirb.*, Cat. D. L. p. 440 (1871); *Semp.*, Mus. Godf. xiv. Lep. p. 32 (1878).
4. **E. Perdita**, *Misk.*, Proc. Roy. Soc. Queensl. vi. p. 263 (1889).
- \*5. **E. Quadrata**, *Butl.*, Cist. Ent. i. p. 175 (1873); *Kirb.*, Cat. D. L. Supp. p. 789 (1877); *Semp.*, Mus. Godf. xiv. Lep. p. 33 (1878).
- N. Queens-land,  
N. Guinea,  
Malay  
Ar'ipelago.
- S. Queens-land.
- Bowen.
- Between  
Sydney and  
Moreton  
Bay.

Genus 2, *TERIAS*, *Swain.*

- Zool. Ill. i. t. 22 (1820-21); *Horsf.*, Cat. Lep. Ins. E. I. C. M. p. 134 (1829); *Bois.*, Sp. Gen. i. p. 651 (1836); *Doubl.*, Gen. D. L. p. 76 (1846-50); *Butl.*, P. Z. S. p. 526 (1871); Cist. Ent. i. p. 44, n. 16 (1870); *Moore*, Lep. Cey. i. p. 118 (1881); *Dist.*, Rhop. Malay, p. 302 (1882-86).
1. **T. Drona**, *Horsf. (nec Wall.)*, Cat. Lep. E. I. C. p. 137, n. 64, t. 1, f. 13 (1829); *Bois.*, Sp. Gen. i. p. 675, n. 37 (1836); *Kirb.*, Cat. D. L. p. 447 (1871); *Semp.*, Mus. Godf. xiv. Lep. p. 34 (1878); *Moore*, Lep. Cey. p. 120, t. 46, f. 3, 3a (1880-81); *Butl.*, Ann. N. H. (5) xvii. p. 213 (1886); *Misk.*, Proc. R. Soc. Qd. vi. p. 256 (1889).
- T. LERNA, *Feld.*, Sitz. Ak. Wiss. Wien. Math. Nat. C. I. xl. p. 448, n. 2 (1860); Reise Nov. Lep. i. p. 212, n. 227 (1865).
- T. ZORAIDE, *Feld.*, Reise Nov. Lep. i. p. 212, n. 227 (1865).
- Brisbane to  
Mackay,  
Malayana,  
India,  
Ceylon.



- T. AUSTRALIS, *Wall.*, Trans. Ent. Soc. ser. iii. iv. p. 321, n. 9 (1867).
- T. CINGALA, *Moore*, Lep. Cey. p. 120, t. 46, f. 4, 4a (1880-81).
- T. RAMA, *Moore*, *l.c.* 121, t. 46, f. 5, 5a (1880-81).
2. T. **Herla**, *Macl. (Pier. H.)*, King's Surv. Aust. ii. p. 460, n. 144 (1827); *Bois.*, Sp. Gen. i. p. 660, n. 13 (1836); *Wall.*, Trans. Ent. Soc. ser. iii. iv. p. 321, n. 8 (1867); *Kirb.*, Cat. D. L. p. 447 (1871); *Semp.*, Mus. Godf. xiv. Lep. p. 33 (1878); *Misk.*, Proc. Roy. Soc. Qd. vi. p. 257 (1889).
- T. HESPERA, *Butl.*, Ann. N. H. (5) xvii. p. 214 (1886).
- \*3. T. **Sana**, *Butl.*, Proc. Z. Soc. p. 470 (1877); *Misk.*, Proc. Roy. Soc. Qd. vi. p. 257 (1889).
4. T. **Lineata**, *Misk.*, Proc. Roy. Soc. Qd. vi. p. 257 (1889).
5. T. **Immaculata**, *Misk.*, *l.c.* 258 (1889) ...
6. T. **Smilax**, *Don. (Pap. S.)*, Ins. N. H. t. 20, f. 3 (1805); *Bois.*, Sp. Gen. i. p. 660, n. 12 (1836); (*Xanthidia*, *S.*) Voy. Astr. Lep. p. 59, n. 1 (1832); *Luc.*, Lep. Ex. t. 39, f. 2 (1835); *Kirb.*, Cat. D. L. p. 447 (1871); *Semp.*, Mus. Godf. xiv. Lep. p. 34 (1878); *Butl.*, An. N. H. (5) xvii. p. 214 (1886); *Misk.*, Proc. Roy. Soc. Qd. vi. p. 258 (1889); *Tep.*, Trans. Roy. Soc. S. Aust. iv. p. 27, t. iii. f. 7 (1882).
- T. INGANA, *Wall.*, Trans. Ent. Soc. ser. iii. iv. p. 332, n. 10 (1867); *Butl.*, Brenchley's Cruise of "Curaçoa," p. 470, t. 49, f. 3 (1873); *Kirb.*, Cat. D. L. p. 447 (1871); *l.c.* Supp. p. 790 (1877).
- T. SINTA, *Wall.*, Trans. Ent. Soc. ser. iii. iv. p. 332, n. 11 (1867).
7. T. **Parvula**, *Herr-Schaff*, Stett. Ent. Zeit. p. 78, n. 54 (1869); *Kirb.*, Cat. D. L. p. 449 (1871); *l.c.* Supp. p. 790 (1877); *Semp.*, Mus. Godf. xiv. Lep. p. 34 (1878); *Misk.*, Proc. Roy. Soc. Qd. vi. p. 259 (1889).
8. T. **Varius**, *Misk.*, Proc. Roy. Soc. Qd. vi. p. 259 (1889).
9. T. **Virgo**, *Wall.*, Trans. Ent. Soc. ser. iii. iv. p. 328, n. 35 (1867); *Kirb.*, Cat. D. L. p. 450 (1871); *Semp.*, Mus. Godf. xiv. Lep. p. 35 (1878); *Ober. (T. Candida) (nec*

Brisbane to  
Bowen.

Cape York.

N. Queens-  
land.

R'khampton.

Adelaide,  
Victoria,  
N. S. Wales  
Queensland  
as far north  
as Rock-  
hampton.

R'khampton.

Brisbane,  
R'khampt'n

C. York,  
Aru Is.,  
Solomon  
Islands.

*Cram.*), Ann. Mus. Gen. xii. p. 454, n. 14 (1878); *Misk.*, Proc. Roy. Soc. Qd. vi. p. 260 (1889).

10. **T. Hecabe**, *Linn.* (*Pap. H.*) Syst. Nat. i. p. 470, n. 74 (1758); (*Pap. H.*), Mus. Ulr. p. 249 (1764); (*Pap. H.*), Syst. Nat. i. 2, p. 763, n. 96 (1767); *Clerck.*, (*Pap. H.*), Icones iii. t. 6, f. 4 a, b. (1764); *Fab.*, (*Pap. H.*), Syst. Ent. p. 472, n. 125 (1775); (*Pap. H.*), Sp. Ins. ii. p. 42, n. 178 (1781); (*Pap. H.*), Mant. Ins. p. 19, n. 201 (1787); (*Pap. H.*), Ent. Syst. iii. p. 192, n. 598 (1793); *Sulz.* (*Pap. H.*), Gesch. Ins. p. 143, t. 15, f. 7 (1776); *Cram.* (*Pap. H.*), Pap. Ex. ii. p. 40, t. 124, B. C. (1779); *Ræm.* (*Pap. H.*), Gen. Ins. t. 15, f. 7 (1789); *Gmel.* (*Pap. H.*), Syst. Nat. i. 5, p. 2269, n. 96 (1790); *Herbst.* (*Pap. H.*), Nat. Schmett. v. p. 171, n. 82, t. 106, f. 3, 4 (1792); *Hubn.* (*Eurema, H.*), Verz. bek. Schmett. p. 96, n. 1022 (1816); *Godt.* (*Pier. H.*), Enc. Meth. ix. p. 134, n. 51 (1819); *Swain.*, Zool. Ins. i. t. 22 (1820); *Horsf.*, Cat. Lep. E. I. C. p. 135, n. 60, t. 1, f. 12 (1829); *Bois.*, Sp. Gen. i. p. 669, n. 27 (1836); *Luc.*, Lep. Ex. p. 75, t. 38, f. 2 (1845); *Butl.*, Proc. Z. Soc. p. 727, n. 1 (1870); *l.c.* 536, n. 59 (1871); *l.c.* 286, n. 71 (1874); *Kirb.*, Cat. D. L. p. 448 (1871); *l.c.* Supp. p. 790 (1877); *Snell*, Tijds. Ent. xix. p. 18, n. 67 (1876); *Murray*, Proc. E. Soc. p. vii. (1875); *Semp.*, Mus. Godf. xiv. Lep. p. 35 (1878); *Ober.*, Ann. Mus. Gen. xii. p. 454, n. 15 (1878); *Moore*, Proc. Zool. Soc. p. 836 (1878); *Butl.*, Trans. E. Soc. p. 197, t. 6 (1880); *Moore*, Lep. Cey. p. 118, t. 45, f. 1, 1a (1880-1); *Snell*, Tijds. Ent. p. 23, n. 1 (1880); *Wood-Mas. and de Nic.*, J. A. S. Beng. xlix. p. 235, n. 56 (1880); *l.c.* 1. p. 236, n. 49 (1881); *Elwes*, Proc. Z. Soc. p. 881 (1881); *Aurivill.*, Kongl. sv. vet. Akad. Handl. xix. p. 60, n. 5 (1882); *Butl.*, Ann. N. H. (5) xvii. p. 212, t. 5 (1886); *Dist.*, Rhop. Malay. p. 304, t. 26, f. 11, 15, 19 (1882-6); *Misk.*, Proc. Roy. Soc. Qd. vi. p. 261 (1889).

Queensland,  
World wide.

- T. SARI, *Horsf.*, Cat. Lep. E. I. C. p. 136, n. 61 (1829); *Wall.*, Trans. E. Soc. ser. 3, iv. p. 326, n. 25 (1867); *Butl.*, Proc. Z. Soc. p. 537, n. 63 (1871); *Kirb.*, Cat. D. L. p. 449 (1871); *Druce*, Proc. Z. Soc. p. 354, n. 4 (1873); *Butl.*, Trans. Lin. Soc. Zool. ser. 2, i. p. 550, n. 2 (1877); *Dist.*, Rhop. Malay. p. 305, t. 25, f. 3, t. 26, f. 3, 7 (1882-6).
- XANTHIDIA FLORICOLA, *Bois.*, Faun. Mad. p. 22, n. 3, t. 2, f. 6 (1833); (*Ter. F.*), Sp. Gen. p. 671, n. 29 (1836).
- T. SUAVA, *Bois.*, Sp. Gen. i. p. 670, n. 28 (1836).
- T. SENEGALENSIS, *Hub.*, Zutr. Ex. Schmett. f. 969, 970 (1837).
- T. BRENDA, *Doub.-Hew.*, Gen. D. L. t. 9, f. 6 (1846-50); *Hopff.*, Pet. Reise Zool. v. p. 367 (1862).
- T. ÆSIOPE, *Men.*, Cat. Mus. Petr. Lep. i. p. 85, t. 2, f. 3 (1855).
- T. HECABEOIDES, *Men.*, l.c. f. 2 (1855); *Butl.*, Trans. Lin. Soc. ser. 2, Zool. i. p. 550, n. 3 (1877); *Moore*, Lep. Cey. i. p. 119, t. 45, f. 3, 3 a, b (1881).
- T. ANEMONE, *Feld.*, Wein. Ent. Mon. vi. p. 23, n. 7 (1862).
- T. EREMIDE, *Feld.*, Reise Nov. Lep. i. p. 214, n. 231 (1865).
- T. CANDACE, *Feld.*, l.c. 213, n. 228 (1865).
- T. PUMILARIS, *Butl.*, Proc. Z. Soc. p. 617, n. 36, t. 67, f. 7 (1875); Trans. Lin. Soc. 2 ser. Zool. i. p. 550, n. 5 (1877); *Dist.*, Rhop. Malay. p. 306, t. 26, f. 10 (1882-6).
- T. SIMULATA, *Moore*, Lep. Cey. p. 119, t. 45, f. 2, 2 a, b (1880-1).
- T. CITRINA, *Moore*, l.c. f. 4, 4a (1880-1).
- T. ROTUNDALIS, *Moore*, l.c. p. 120, t. 46, f. 1, 1 a, b (1880-1).
- T. UNIFORMIS, *Moore*, l.c. f. 2, 2 a, b (1880-1).
- T. VALLIVOLANS, *Butl.*, Ann. N. H. (5), xi. p. 420, n. 71 (1883); *Dist.*, Rhop. Malay. p. 306, n. 4, t. 26, f. 17 (1882-6).
- T. PHÆBUS, *Butl.*, Ann. N. H. (5), xvii. p. 221, t. 5, f. 4 (1886).

Genus 3, LEPTOSIA, *Hubn.*

Verz. bek. Schmett. p. 95 (1816); *Scudd.*, Proc. Amer. Arts and Sc. x. p. 204, n. 618 (1875); *Dist.*, Rhop. Malay. p. 287 (1882-6).



NYCHITONA, *Butl.*, Cist. Ent. i. p. 34, 41 (1870); *Moore*, Lep. Cey. i. p. 117 (1880-1).

NINA, *Horsf.*, Cat. Lep. E. I. C. p. 140 (1829).

PONTIA, *Bois.* (*nec Fab.*), Sp. Gen. i. p. 430 (1836).

\*1. **L. Crokera**, *Mach.* (*Pon. C.*), King's Surv. Aust. ii. App. p. 458, n. 137 (1827); *Bois.* (*Pon. C.*), Sp. Gen. i. p. 431, n. 1 (1836); -*Kirb.* (*Pon. C.*), Cat. D. L. p. 439 (1871).

N. W. Australia.

#### Genus 4, *PIERIS*, *Schr.*

Fauna Boica, p. 152, 164 (1801); *Latr.*, Hist. Nat. Crust. Ins. xiv. p. 111 (1805); Enc. Meth. ix. p. 10 (1819); *Bois.*, Sp. Gen. i. p. 434 (1836); *Doubl.*, G. D. L. p. 42 (1846-50).

PONTIA, *Fab.*, Ill. Mag. vi. p. 283 (1807).

BELENOIS, *Hub.*, Verz. bek. Schmett. p. 92 (1816).

1. **P. Teutonia**, *Fab.* (*Pap. T.*), Syst. Ent. p. 474, n. 137 (1775); *Sulz.* (*Pap. T.*), Gesch. Ins. t. 15, f. 9 (1776); *Don.* (*Pap. T.*), Ins. N. H. t. 17, f. 1 (1805); *Ræm.* (*Pap. T.*), Gen. Ins. t. 15, f. 9, p. 69 (1789); *Godt.*, Enc. Meth. ix. p. 152, n. 120 (1819); *Bois.*, Voy. Astr. Lep. p. 51, n. 10 (1832); Sp. Gen. i. p. 473, n. 50 (1836); *Wall.*, Trans. E. Soc. Ser. 3, iv. p. 329, n. 2 (1867); *Kirb.*, Cat. D. L. p. 459 (1871); *Semp.*, Mus. Godf. xiv. Lep. p. 35 (1878); *Tep.*, Trans. R. Soc. S. Aust. iv. p. 27 (1882); *Math.*, Trans. E. Soc. p. 155, t. 6, f. 6, 6a (1888); *Edwards*, *H.* (*Del. T.*), Vic. Nat. p. 1 (June, 1890).

N. W. Australia,  
Adelaide,  
Victoria,  
N.S. Wales,  
Queensl'nd,  
Fiji,  
Tonga,  
Malay  
Ar'ipelago.

P. CORONEA, *Cram.* (*Pap. C.*), Pap. Ex. i. t. 68, B. C. (1779); *l.c.* iv. t. 361, G. H. (1782); *Fab.*, Sp. Gen. p. 46, 47, n. 196 201 (1781); Mant. Ins. p. 21, n. 221, 226 (1787); Ent. Syst. iii. p. 199, 201, n. 622, 628 (1793); *Herbst.*, Naturs. Schmett. v. p. 120, t. 98, f. 8, 9 (1792); *Godt.*, Enc. Meth. ix. p. 151, n. 115 (1819); *Bois.*, Sp. Gen. i. p. 474, n. 52 (1836); *Herr-Schiff.*, Stett. Ent. Zeit. p. 76, n. 41, t. 1, f. 3 (1869); Ex. Schmett. ii. f. 105 (1869).

♀ P. DEIOPEIA, *Don.* (*Pap. D.*), Ins. N. H. t. 21, f. 2 (1805).

P. CLYTIE, *Don.*, *l.c.* t. 19, f. 2 (1805); *Godt.*, Enc. Meth. ix. p. 151, n. 116 (1819); *Bois.*, Voy. Astr. Lep. p. 54,

- n. 16 (1832); *Sp. Gen.* i. p. 475, n. 54 (1836); *Kirb.*, *Cat. D. L.* p. 459 (1871).  
 P. NISEIA, *Macl.*, *King's Surv. Aust.* App. 459, n. 138 (1827); *Bois.*, *Sp. Gen.* i. p. 473, n. 51 (1836); *Kirb.*, *Cat. D. L.* p. 459 (1871).

2. P. **Scyllara**, *Macl.*, *King's Surv. Aust.* ii. App. p. 459, n. 139 (1827); *Bois.*, *Sp. Gen.* i. p. 482, n. 66 (1836); *Kirb.*, *Cat. D. L.* (*Tach. S.*) p. 466 (1871).

- P. PERIMALE, *Don. (Pap. P.)*, *Ins. N. H.* t. 20, f. 1 (1805); *Godt.*, *Enc. Meth.* ix. p. 152, n. 117 (1819); *Bois.*, *Voy. Astr. Lep.* p. 56, n. 19 (1832); *Sp. Gen.* i. p. 475, n. 53 (1836); *Kirb.*, *Cat. D. L.* p. 460 (1871).

- P. PERICLEA, *Feld.*, *Reise Nov. Lep.* i. p. 169, n. 151 (1865); *Wall.*, *Trans. E. Soc.* ser. 3, iv. p. 333, n. 14 (1867); *Herr-Schff.*, *Stett. Ent. Zeit.* p. 76, n. 45, t. 1, f. 4 (1869); *Ex. Schmett.* ii. f. 103 (1869); *Kirb.*, *Cat. D. L.* p. 460 (1871).

- P. NARSES, *Wall.*, *Trans. E. Soc.* ser. 3, iv. p. 333, n. 13, t. 6, f. 3 (1867).

- P. LANASSA, *Bois.*, *Sp. Gen.* i. p. 477, n. 57 (1836); *Kirb.*, *Cat. D. L.* p. 460 (1871); *Semp.*, *Mus. Godf.* xiv. *Lep.* p. 36 (1878).

- P. RACHEL, *Bois.*, *Sp. Gen.* i. p. 469, n. 46 (1836); *Kirb.*, *Cat. D. L.* p. 460 (1871).

- P. PERITHEA, *Feld.*, *Reise Nov. Lep.* i. p. 169, n. 150 (1865).

- P. WALLACEANA, *Feld.*, *l.c.* p. 168, n. 148 (1865).

- P. LATILIMBATA, *Butl. (Bel. L.)*, *Ann. N. H.* (4), xviii. p. 247, n. 26 (1876); *Math.*, *Trans. E. Soc.* p. 155, t. 6, f. 4 (1888).

*Perimale* of Donovan is the rather uncommon varietal form of this species, with the underside of secondaries uniform light-brown; hence his name cannot be adopted for the species. *Periclea* and *Narses* are the same.

Sydney to  
Cape York,  
N. W. Australia,  
N. Guinea,  
Fiji,  
New Caledonia.

### Genus 5, *TACHYRIS*, *Wall.*

*Trans. E. Soc.* ser. 3, iv. p. 361 (1867).

- APPIAS, *Hüb.*, *Verz. bek. Schmett.* p. 91 (1816); *Butl.*, *Cist. Ent.* i. p. 49 (1870); *Moore* (part) *Lep. Cey.* i. p. 134 (1881).

1. **T. Melania**, *Fab.* (*Pap. M.*), Syst. Ent. p. 475, n. 140 (1775); *Sp. Ins.* p. 47, n. 202 (1781); *Mant. Ins.* p. 21, n. 227 (1787); *Ent. Syst.* iii. p. 201, n. 629 (1793); *Don.* (*Pap. M.*), *Ins. N. H.* t. 17, f. 2 (1805); *Godt.* (*Pier. M.*), *Enc. Meth.* ix. p. 132, n. 42 (1819); *Hew.*, *Trans. E. Soc.* p. 99 (1868); *Butl.* (*Thyca, M.*), *B. M. Cat. Fab. Lep.* p. 206 (1869); (*Appias, M.*), *Brenchley's Cruise of "Curacao"* p. 471, t. 49, f. 4, 5 (1873); *Kirb.* (*Delias, M.*), *Cat. D. L.* p. 477 (1871); *Misk.*, *Trans. E. Soc.* p. 91 (1884).
- ♂ **T. CLEMENTINA**, *Feld.* (*Pier. C.*), *Sitsb. Ak. Wiss. Wien. Math. Nat. Cl.* xl. p. 448, n. 1 (1860); *Reise. Nov. Lep.* i. p. 162, n. 133, t. 25, f. 6 (1865); *Wall.*, *Trans. E. Soc.* ser. 3, iv. p. 374, n. 20 (1867); *Kirb.*, *Cat. D. L.* p. 468 (1871).
2. **T. Asteria**, *Misk.*, ♂ *Trans. L. Soc. N.S.W.* 2nd ser. iii. p. 1514 (1888). Cairns, Port Douglas.
- ♀ Almost exactly as in ♂, but with the apical black area in primaries, touching end of cell and extending along costa nearly to base; the sub-apical band of white spots much smaller; basal grey area less extensive; the wing much less angulated apically.
- Secondaries*: With the costal area white.
- UNDERSIDE*.—*Primaries*: The region corresponding with the inner border of black apical area of upperside, represented by a pronounced black band, extending from costa to outer margin nearly to hinder angle; otherwise as in ♂.
- Exp.*: 52 mm. *Hab.*: Cairns.
- Coll.*: Queensland Museum.
- This, the only example known of this sex, was obtained at Cairns by the Museum collector (Mr. Wilde), and is doubtless a small specimen. Since my description of the ♂, several more specimens of that sex have been collected, all from Cairns.
3. **T. Ega**, *Bois.* (*Pier. E.*), *Sp. Gen.* p. 536, n. 144 (1836); *Feisth.*, *Rev. Zool.* t. 18, f. 2 (1839); *Kirb.*, *Cat. D. L.* p. 467 (1871); *Semp.* (*Ap. E.*), *Mus. Godf.* xiv. *Lep.* p. 37 (1878). Sydney to Cardwell.
- ♀ **PIER. MELANIA**, *Bois.* (*nec Fab.*), *Sp. Gen.* i. p. 537, n. 146 (1836).
- var.* **CALEDONICA**, *Feld.*, *Verh. Zool. Bot. Ges.* xii. p. 495, n. 207 (1862).



- \*4. **T. Ada**, *Cram.* (*Pap. A.*), *Pap. Ex.* iv. t. 363, C. D. (1782); *Godt.* (*Pier. A.*), *Enc. Meth.* ix. p. 145, n. 194 (1819); *Bois.*, *Voy. Astr. Lep.* p. 46, n. 2 (1832); *Sp. Gen. i.* p. 479, n. 60 (1836); *Luc.*, *Lep. Ex. t.* 26, f. 1 (1835); *Voll.*, *Faun. Ind-neerl. Mon. Pier.* p. 41, n. 54, t. 5, f. 3 (1865); *Wall.*, *Trans. E. Soc. ser. 3*, iv. p. 367, n. 12 (1867).
- PIER. CILLA**, *Feld.*, *Reise Nov. Lep. i.* p. 165, n. 139 (1865).
- T. CLAVIS**, *Wall.*, *Trans. E. Soc. ser. 3*, iv. p. 367, n. 13 (1847).

Genus 6, *DELIAS*, *Hubn.*

*Verz. bek. Schmett.* p. 91, 92 (1816); *Butl.*, *Cist. Ent. i.* p. 40 (1870); *Moore*, *Lep. Cey. i.* p. 139 (1881); *Dist*, *Rhop. Malay.* p. 289 (1882-6).

**CATHÆMIA**, *Hubn.*, *Verz. bek. Schmett.* p. 92 (1816).

**PONTIA**, *Hubn. (nec. Fab.)*, *l.c.* 92 (1816).

**PIERIS**, *sec. 1*, *Doubl.*, *Gen. D. L.* p. 44 (1846-50).

**THYCA**, *Wallen*, *Svensk. Acad. Förh.* p. 76 (1858); *Wall.*, *Trans. Ent. Soc. ser. 3*, iv. p. 344 (1867).

1. **D. Aganippe**, *Don.* (*Pap. A.*), *Ins. N. H.* t. 29 (1805); *Godt.* (*Pier. A.*), *Enc. Meth. ix.* p. 153, n. 121 (1819); *Bois. (Pier. A.)*, *Voy. Astr. Lep.* p. 54, n. 15 (1832); *Luc.*, *Lep. Ex. t.* 32, f. 1 (1835); *Bois.*, *Sp. Gen. i.* p. 457, n. 26 (1836); *Wall. (Thyc. A.)*, *Trans. E. Soc. ser. 3*, iv. p. 349, n. 12 (1867); *McCoy*, *Prod. Zool. Vic. Dec. i.* p. 37, t. 10 (1878); *Kirb.*, *Cat. D. L.* p. 473 (1871); *Tep. (Pier. A.)*, *Trans. Roy. Soc. S. Aust. iv.* p. 27, t. 3, f. 4 (1882); *Semp.*, *Mus. Godf. xiv. Lep.* p. 38 (1878).
  2. **D. Harpalyce**, *Don.* (*Pap. H.*), *Ins. N. H.* t. 18, f. 1 (1805); *Godt.*, *Enc. Meth. ix.* p. 149, n. 109 (1819); *Lew.*, *Lep. Ins. N.S.W., Frontispiece* (1822); *Bois. (Pier. H.)*, *Voy. Astr. Lep.* p. 52, n. 13 (1832); *Sp. Gen. i.* p. 458, n. 28 (1836); *Kirb.*, *Cat. D. L.* p. 473 (1871); *l.c.* *Supp.* p. 796 (1877); *McCoy*, *Prod. Zool. Vic. Dec. i.* p. 33, t. 9 (1873); *Semp.*, *Mus. Godf. xiv. Lep.* p. 38 (1878); *Tep. (Pier. H.)*, *Trans. Roy. Soc. S. Aust. iv.* p. 27 (1882).
- PAP. LEWINI**, *Thon.*, *Ent. Arch.* p. 38, t. 3, f. 10 (1828).

Cape Claremont,  
Papua,  
Aru.

S. Australia,  
Victoria,  
N.S. Wales,  
Brisbane.

S. Australia,  
Victoria,  
Sydney,  
Newcastle.

3. **D. Nigrina**, *Fab.* (*Pap. N.*), Syst. Ent. p. 475, n. 139 (1775); *Sp. Ins.* p. 46, n. 198 (1781); *Mant. Ins.* p. 21, n. 223 (1787); *Ent. Syst.* iii. p. 200, n. 625 (1793); *Don.* (*Pap. N.*), *Ins. N. H.* t. 19, f. 1 (1805); *Godt.* (*Pier. N.*), *Enc. Meth.* ix. p. 149, n. 108 (1819); *Hubn.* (*Symmachlas, N.*), *Samml. Ex. Schmett.* (1816-36); *Bois.*, *Voy. Astr. Lep.* p. 52, n. 12 (1832); *Sp. Gen.* i. p. 459, n. 29 (1836); *Swain.*, *Zool. Ill. Ins.* ii. t. 69 (1833); *Butl.* (*Thyc. N.*), *B. M. Cat. Fab. Lep.* p. 207 (1869); *Kirb.*, *Cat. D. L.* p. 473 (1871); *Semp.*, *Mus. Godf.* xiv. *Lep.* p. 38 (1878). Sydney to Johnstone River.
4. **D. Argenthona**, *Fab.* (*Pap. A.*), *Ent. Syst.* iii. 1, p. 200, n. 624 (1793); *Godt.*, *Enc. Meth.* ix. p. 150, n. 112 (1819); *Wall.* (*Thyc. A.*), *Trans. E. Soc.* ser. 3, iv. p. 354, n. 30 (1867); *Butl.* (*Thyc. A.*), *B. M. Cat. Fab. Lep.* p. 207 (1869); *Kirb.*, *Cat. D. L.* p. 474 (1871); *Kirb.*, *Cat. D. L. Supp.* p. 796 (1877); *Semp.*, *Mus. Godf.* xiv. *Lep.* p. 38 (1889); *Tep.*, *Trans. Roy. Soc. S. Aust.* iv. p. 27 (1882). S. Australia, Sydney, Brisbane to Cairns.
- PIER. PROTOCHARIS, *Bois.*, *Sp. Gen.* i. p. 457, n. 27 (1836).
- THYC. FRAGALACTEA, *Butl.*, *Ann. N. H.* ser. 4, iv. p. 243 (1869); *Lep. Ex.* p. 64, t. 20, f. 1 (1871); *Kirb.*, *Cat. D. L. Supp.* p. 475 (1871).
- PAP. PLEXARIS, *Don.*, *Ins. N. H.* t. 18, f. 2 (1805).
5. **D. Nysa**, *Fab.* (*Pap. N.*), Syst. Ent. p. 473, n. 128 (1775); *Sp. Ins.* p. 43, n. 182 (1781); *Mant. Ins.* p. 20, n. 206 (1787); *Ent. Syst.* iii. p. 195, n. 606 (1793); *Godt.*, *Enc. Meth.* ix. p. 152, n. 119 (1819); *Bois.* (*Pier. N.*), *Voy. Astr. Lep.* p. 50, n. 9 (1832); *Sp. Ins.* i. p. 476, n. 55 (1836); *Butl.* (*Thyc. N.*), *B. M. Cat. Fab. Lep.* p. 206 (1869); *Kirb.*, *Cat. D. L.* p. 477 (1871); *Semp.*, *Mus. Godf.* xiv. *Lep.* p. 37 (1878). Newcastle, Brisbane to Johnstone River.
- ♀ PAP. ENDORA, *Don.*, *Ins. N. H.* t. 20, f. 2 (1805); *Godt.*, *Enc. Meth.* ix. p. 152, n. 118 (1819).

6. **D. Mysis**, *Fab. (Pap. M.)*, Syst. Ent. p. 475, n. 138 (1775); *Sp. Ins.* p. 46, n. 197 (1781); *Mant. Ins.* p. 21, n. 222 (1787); *Ent. Syst.* iii. p. 200, n. 623 (1793); *Don.*, *Ins. N. H.* t. 21, f. 1 (1805); *Godt. (Pier. M.)*, *Enc. Meth.* ix. p. 150, n. 111 (1819); *Bois. (Pier. M.)*, *Voy. Astr. Lep.* p. 55, n. 17 (1832); *Sp. Gen.* i. p. 460, n. 31 (1836); *Wall. (Thy. M.)*, *Trans. E. Soc.* ser. 3, iv. p. 356, n. 37 (1867); *Kirb.*, *Cat. D. L.* p. 475 (1871); *Semp.*, *Mus. Godf.* xiv. *Lep.* p. 37 (1878).
- PIER. LARA, *Bois.*, *Sp. Gen.* i. p. 461 (1836); *Voll.*, *Mon. Pier.* p. 12, n. 11 (1865).
- PIER. CRUENTATA,\* *Butl.*, *Proc. Zool. Soc.* p. 455, t. 26, f. 2 (1865).
7. **D. Nigidius**, *Misk.*, ♂ *Trans. E. Soc.* p. 93 (1884); ♀ *Proc. L. Soc. N.S.W.* ser. 2, iii. p. 1515 (1888).
8. **D. Inferna**, *Butl.*, *Lep. Ex.* p. 63, t. 24, f. 6 (1871); *Kirb.*, *Cat. D. L. Supp.* p. 796 (1877); *Semp.*, *Mus. Godf.* xiv. *Lep.* p. 39 (1878).

Mackay to  
Cairns,  
N. Guinea.

Cardwell,  
Cairns.

C. York.

Genus 7, *CALLIDRYAS*, *Bois.*

- Lep. Amer. Sept.* p. 73 (1833); *Sp. Gen.* i. p. 605 (1836); *Doubl.*, *Gen. D. L.* p. 66 (1846-50); *Trim.*, *Rhop. Afr. Aust.* p. 67 (1861).
- CATOPSILIA, *Hubn.*, *Verz. bek. Schmett.* p. 98, 99 (1816); *Butl.*, *Lep. Ex.* i. p. 54 (1871); *Moore*, *Lep. Cey.* p. 121 (1880-1); *Dist.*, *Rhop. Malay.* p. 295 (1882-6).
- MURTIA, *Hubn.*, *Verz. bek. Schmett.* p. 98, 99 (1816).
- COLIAS, *Hubn.*, *l.c.* (1816); *Latr. (nec Fab.)*, *Enc. Meth.* ix. p. 10, (1819); *Swain.*, *Zool. Ill.* i. t. 5 (1820-1).

1. **C. Pyranthe**, *Lin. (Pap. P.)*, *Syst. Nat.* i. p. 469, n. 66 (1758); *Mus. Ulr.* p. 245 (1764); *Syst. Nat.* i. 2, p. 763, n. 98 (1767); *Fab.*, *Syst. Ent.* p. 473, n. 132 (1775); *Sp. Ins.* p. 44, n. 188 (1781); *Mant. Ins.* p. 20, n. 213 (1787); *Ent. Sys.* iii. p. 198, n. 616 (1793); *Don.*, *Ins. China*, t. 32, f. 1 (1798); *Godt. (Col. P.)*, *Enc. Meth.* ix. p. 77, n. 24 (1819); *Horsf.*, *Disc. Cat. Lep. E. I. C.* p. 129, n. 53 (1828); *Bois.*, *Sp. Gen.* i. p. 611, n. 5 (1836); *Horsf. and Moore*, *Cat. Lep. E. I. C.* i. p. 56, t. 1, f. 8, 8a (1857); *Butl.*, *B. M. Cat. Fab. Lep.* p. 224

Brisbane to  
C. York.  
Regio Indica.



(1869); *Kirb.*, Cat. D. L. p. 482 (1871); *Butl.*, Lep. Ex. p. 36, t. 15, f. 8, 9, 10 (1874); *Moore*, Lep. Cey. p. 124, t. 47, f. 2, 2a (1880-1).

PAP. CHRYSEIS, *Dru.*, Ill. Ex. Ent. i. t. 12, f. 3, 4 (1773); *Butl.*, Lep. Ex. i. p. 35, n. 8, t. 15, f. 4-7 (1870); *Kirb.*, Cat. D. L. p. 482 (1871); *Semp.* (*Cat. C.*), Mus. Godf. xiv. Lep. p. 39 (1878); *Moore* (*Cat. C.*), Lep. Cey. p. 125, t. 48, f. 3, 3a (1880-1); *Dist.*, Rhop. Malay. p. 300, t. 25, f. 3, 3a (1882-6).

PAP. GNOME, *Fab.*, Syst. Ent. App. p. 808 (1775).

PAP. GNOMA, *Fab.*, Syst. Ent. App. p. 828, n. 152, 153 (1776); Sp. Ins. p. 50, n. 217 (1781); Mant. Ins. p. 24, n. 250 (1787); Ent. Syst. iii. p. 210, n. 658 (1793); *Butl.* (*Call. G.*), Lep. Ex. i. p. 43, t. 16, f. 1-4 (1870); *Moore* (*Cat. G.*), Lep. Cey. p. 123, t. 48, f. 2 (1880-1).

PAP. ALCYONE, *Cram.*, Pap. Ex. i. t. 58, A.-C. (1779).

PAP. FLAVOCINERASCENS, *Goeze.*, Ent. Beytr. iii. 1, p. 183, n. 86 (1779).

PAP. PHILIPPINA, *Cram.*, Pap. Ex. iv. t. 361, C. D. (1782); *Godt.* (*Col. P.*), Enc. Meth. ix. p. 96, n. 22 (1819); *Horsf.*, Cat. Lep. E. I. C. p. 130, n. 54 (1829); *Bois.* (*Call. P.*), Sp. Gen. i. p. 609, n. 4 (1836); *Kirb.*, Cat. D. L. p. 482 (1871).

PAP. NEPHE, *Fab.*, Ent. Syst. iii. 1, p. 190, n. 588 (1793).

PAP. ILEA, *Fab.*, l.c. Supp. p. 426 (1798); *Moore* (*Cat. I.*), Lep. Cey. p. 124, t. 47, f. 1, 1a, 1b (1880-1).

PAP. MINNA, *Herbst.*, Naturs. Schmett. v. t. 89, f. 1, 2 (1792); *Hubn.* (*Mancipium fugax*, M.), Samml. Ex. Schmett. (1806-16); *Bois.* (*Call. M.*), Sp. Gen. i. p. 612, n. 6 (1836); *Wall.* (*Call. M.*), Trans. E. Soc. ser. 3, iv. p. 400, n. 4 (1867).

C. THISORELLA, *Bois.* (*nec Wall.*), Sp. Gen. i. p. 609, n. 3 (1836).

C. EVANGELINA, *Butl.*, Trans. E. Soc. p. 11, n. 6 (1870); Lep. Ex. i. p. 35, n. 7, t. 15, f. 1-3 (1870); *Kirb.*, Cat. D. L. p. 482 (1871).

2. **C. Lactea**, *Butl.*, Ann. N. H. ser. 4, v. p. 361 (1870); *Lep. Ex. i.* p. 43, t. 16, f. 5-7 (1870); Brenchley's Cruise of "Curaçoa," p. 470, t. 49, f. 1, 2 (1873); *Kirb.*, Cat. D. L. p. 487 (1871); *Semp. (Cat. L.)*, Mus. Godf. xiv. *Lep.* p. 39 (1878). Brisbane to Mackay.
3. **C. Hinda**, *Butl.*, *Lep. Ex. i.* p. 31, t. 12, f. 9, 10 (1870) ♀; *Kirb.*, Cat. D. L. p. 486 (1871); *Semp.*, Mus. Godf. xiv. *Lep.* p. 39 (1878). Brisbane, R'hamp't'n.
- ♀ **C. THISORELLA**, *Wall. (nec Bois.)*, Trans. E. Soc. ser. 3, iv. p. 399, n. 1 (1867).
4. **C. Crocale**, *Cram. (Pap. C.)*, *Pap. Ex. i.* t. 55, f. C. D. (1779) ♀; *Bois.*, Sp. Gen. i. p. 625, n. 19 (1836); *Wall.*, Trans. E. Soc. ser. 3, iv. p. 400, n. 7 (1867); *Butl.*, *Lep. Ex. i.* p. 22, t. 9, f. 1, 2, 3, 6 (1870); *Kirb.*, Cat. D. L. p. 485 (1871); *Druce*, Proc. Z. Soc. p. 355, n. 1 (1873); *l.c.* p. 108, n. 2 (1874); *Snell*, Tijds. Ent. xix. p. 18, n. 66 (1876); *l.c.* xxi. p. 35, n. 144 (1878); *Moore*, Proc. Z. Soc. p. 837 (1878); *Butl. (Cat. C.)*, Trans. L. Soc. ser. 2, zol. 1, p. 550, n. 1 (1877); *Moore (Cat. C.)*, Proc. Z. Soc. p. 591 (1877); *l.c.* p. 253 (1882); *Lep. Cey. i.* p. 122, t. 48, f. 1, 1a, 1b (1830-1); *Semp. (Cat. C.)*, Mus. Godf. xiv. *Lep.* p. 40 (1878); *Wood-Mas. and de Nic. (Cat. C.)*, J. A. S. Beng. xix. p. 236, n. 60 (1880); *de Nic. (Cat. C.)*, J. A. S. Beng. li. p. 63, n. 188 (1882); *Kheil (Cat. C.)*, Rhop. der Insel. Nias. p. 135, n. 134 (1884); *Dist. (Cat. C.)*, Rhop. Malay. p. 296, t. 25, f. 11, 12 (1882-6).
- PAP. JUGURTHA, *Cram.*, *Pap. Ex. ii.* t. 187, E, F (1779).
- PAP. ALCMEONE, *Fab. (nec Cram., nec Godt., nec Bois.)*, Ent. Syst. iii. 1, p. 196, n. 611 (1793); *Hubn. (Cat. A.)*, Verz. bek. Schmett. 98 (1816); *Horsf. (Col. A.)*, Cat. *Lep. E. I. C.* p. 131 (1828); *Horsf. and Moore (Call. A.)*, Cat. *Lep. Mus. E. I. C. i.* p. 57, t. 1, f. 7, 7a (1857); *Doubl. (Call. A.)*, Gen. D. L. p. 68, n. 19 (1846-50).
- ♂ PAP. LALAGE, *Herbst.*, Naturs. Schmett. v. p. 163, t. 106, f. 1, 2 (1792). Brisbane to C. York. Regio Indica.

COL. JUGURTHINA, *Godt.*, Enc. Meth. ix. p. 96, n. 21 (1819); *Horsf.*, Cat. Lep. E. I. C. p. 132 (1828).

♀ C. ENDEER, *Bois.*, Voy. Astr. Lep. p. 63, t. 2, f. 3, 4 (1832).

C. FLAVA, *Butl.*, Ann. N. H. ser. 4, iv. p. 202, n. 1 (1869); Lep. Ex. i. p. 23, t. 9, f. 4, 5 (1870).

5. C. Pomona, *Fab.* (*Pap. P.*), Syst. Ent. p. 479, n. 158 (1775); Sp. Ins. p. 51, n. 222 (1781); Mant. Ins. p. 24, n. 256 (1787); Ent. Syst. iii. p. 213, n. 665 (1793); *Don.* (*Pap. P.*), Ins. N. H. t. 17, f. 3 (1805); *Bois.*, Voy. Astr. Lep. p. 62, n. 1 (1832); *Kirb.*, Cat. D. L. p. 485 (1871); *l.c.* Supp. p. 798 (1877); *Semp.* (*Cat. P.*), Mus. Godf. xiv. Lep. p. 40 (1878).

♀ PAP. CATILLA, *Cram.*, Pap. Ex. iii. t. 229, f. D. E. (1782); *Godt.* (*Col. C.*), Enc. Meth. ix. p. 95, n. 20 (1819); *Butl.*, B. M. Cat. F. Lep. p. 222 (1869); Lep. Ex. i. p. 24, t. 9, f. 7-10 (1870); *Druce*, Proc. Z. Soc. p. 355, n. 2 (1873); *Butl.* (*Cat. C.*), Trans. Lin. Soc. ser. 2, Zool. i. p. 551, n. 2 (1877); *Moore* (*Cat. C.*), Proc. Zool. Soc. p. 591 (1877); (*Call. C.*), *l.c.* p. 837 (1878); *Godm. and Salv.* (*Call. C.*), *l.c.* p. 640, n. 24 (1878); *Enys.*, Cat. Butt. N. Zeal. p. 17, n. 14 (1880); *Wood-Mas. and de Nic.* (*Cat. C.*), J. A. S. Beng. l. p. 251, n. 87 (1881); *Moore* (*Cat. C.*), Lep. Cey. p. 122, t. 47, f. 3, 3a, ♂ ♀ (1880-1); *Dist.*, Rhop. Malay. p. 297, t. 25, f. 15, 16 (1882-6); *de Nic.* (*Cat. C.*), J. A. S. Beng. li. p. 63, n. 187 (1882).

♂ PAP. HILARIA, *Cram.*, Pap. Ex. iv. t. 339, f. A. B. (1782); *Godt.* (*Col. H.*), Enc. Meth. ix. p. 96, n. 25 (1819); *Bois.*, Sp. Gen. i. p. 626, n. 20 (1836); *Horsf.* (*Col. H.*), Cat. Lep. Mus. E. I. C. p. 132 (1828); *Wall.*, Trans. E. Soc. ser. 3, iv. p. 400, n. 6 (1867).

PAP. NIGROPUNCTATUS, *Goeze*, Ent. Beytr. i. p. 185, n. 96 (1779).

♀ PAP. TITANIA, *Fab.*, Ent. Syst. p. 209, n. 656 (1793); ♂ Ent. Syst. Supp. p. 428 (1798); *Godt.* (*Col. T.*), Enc. Meth. ix. p. 97, n. 26 (1819).

Sydney to  
C. York,  
N. Zealand?  
Regio  
Indica.

COL. ALCMEONE, *Godt. (nec Cram., nec Fab., Hub., Horsf., Horsf. and Moore, and Doubl.)*, Enc. Meth. ix. p. 97, n. 27 (1819); *Bois. (Call. A.)*, Sp. Gen. i. p. 637, n. 21 (1836).

CALL. PHLEGEUS, *Wall.*, Trans. E. Soc. ser. 3, iv. p. 400, n. 6 (1867).

6. **C. Gorgophone**, *Bois.*, Sp. Gen. i. p. 632, n. 26 (1836); *Doubl. and Hew.*, Gen. D. L. p. 68, n. 24, t. 9, f. 2 (1846-50); *Herr.-Schff.*, Stett. Ent. Zeit. p. 77, n. 46 (1869); *Butl.*, Lep. Ex. i. p. 30, t. 12, f. 1-4 (1870); *Kirb.*, Cat. D. L. p. 486, 487 (1871); *Semp. (Cat. G.)*, Mus. Godf. xiv. Lep. p. 40 (1878); *Math.*, Trans. E. Soc. p. 158, t. 6, f. 7 (1888).

Brisbane to  
Cardwell.

7. **C. Scylla**, *Lin. (Pap. S.)*, Mus. Ulr. p. 242 (1764); *Syst. Nat.* i. 2, p. 763, n. 95 (1767); *Joh. Amœn. Acad.* vi. p. 404, n. 57 (1764); *Houtt.*, Nat. Hist. i. 11, p. 256, t. 88, f. 5 (1767); *Mull. (Pap. S.)*, *Naturs.* v. 1, p. 592, n. 95, t. 18, f. 5 (1774); *Meerb. (Pap. S.)*, Aft. zeldt. t. 16 (1775); *Cram. (Pap. S.)*, *Pap. Ex.* i. t. 12, f. C. D. (1775); *Sulz. (Pap. S.)*, *Gesch. Ins.* p. 143, t. 15, f. 6, (1776); *Rœm. (Pap. S.)*, *Gen. Ins.* t. 15, f. 6 (1789); *Gmel. (Pap. S.)*, *Syst. Nat.* i. 5, p. 2268, n. 95 (1790); *Herbst. (Pap. S.)*, *Naturs. Schmett.* v. p. 198, n. 105, t. 111, f. 5, 6 (1792); *Don. (Pap. S.)*, *Ins. Ind.* t. 28, f. 3 (1800); *Turt. (Pap. S.)*, *Syst. of Nat.* iii. 2, p. 72 (1806); *Hubn. (Col. S.)*, *Verz. bek. Schmett.* p. 99, n. 1050 (1816); *Godt. (Col. S.)*, *Enc. Meth.* ix. p. 95, n. 19 (1819); *Horsf. (Col. S.)*, *Cat. Lep. E. I. C.* p. 133, n. 59 (1828); *Bois.*, Sp. Gen. i. p. 631, n. 25 (1836); *Luc.*, Lep. Ex. p. 80, t. 40, f. 1 (1845); *Horsf. and Moore*, *Cat. Lep. Mus. E. I. C.* i. p. 58, n. 102 (1857); *Voll.*, *Faun. Ind. Neerl. Pier.* p. 62, n. 4 (1865); *Butl.*, B. M. Cat. F. Lep. p. 220 (1869); *Lep. Ex.* p. 31, n. 6, t. 12, f. 5-8 (1870); *Kirb. (Cat. S.)*, *Cat. D. L.* p. 486 (1871); *Snell*, *Tijd. Ent.* xix. p. 18, n. 64 (1876); *l.c.* xx. p. 2 (1877); *l.c.* xxi. p. 35, n. 133 (1878); *Butl. (Cat. S.)*, *Trans. L. Soc.* ser. 2, *Zool.* i. p. 551, n. 4 (1877); *Ober.*,

Cardwell,  
Hughenden,  
Malay Archi-  
pelago.



- Ann. Mus. Gen. p. 454, n. 12 (1878);  
*Snell*, Lep. v. Midden. Sumatra p. 23,  
 n. 2 (1880); *Aurivill.* (*Cat. S.*), Kongl.  
 Sv. vet. Akad. Handl. xix. n. 5, p. 55  
 (1882); *Dist.* (*Cat. S.*), Rhop. Malay.  
 p. 298, n. 3, t. 24, f. 1, 2 (1882-6).  
 PAP. CORNELIA, *Fab.*, Syst. Ent. p. 475, n. 142  
 (1775); Sp. Ins. p. 47, n. 203 (1781);  
 Mant. Ins. p. 21, n. 228, 229 (1787);  
 Ent. Syst. iii. p. 201, n. 630 (1793).  
 C. ETESIA, *Hew.*, Ex. Butl. iv. Call. t. 1,  
 f. 5. 6 (1867).

Family II., NYMPHALIDÆ, *Swain.*

- Phil. Mag. ser. 2, i. p. 187 (1827); *Westw.*, Gen. D. L. p. 143 (1852);  
*Bates*, Trans. L. Soc. xxiii. p. 515 (1861); Jour. Entom. i. p. 220  
 (1861); ii. p. 176 (1864); *Dist.*, Rhop. Malay. p. 2 (1882-6).

Sub-Family I., DANAINÆ, *Bates.*

- Jour. Ent. ii. p. 176 (1864); *Dist.*, Rhop. Malay. p. 3 (1882-6).  
 DANAIDÆ ET HELICONIDÆ, *p. Doubl.*, Gen. D. L. pp. 84-96 (1847).  
 DANAIDÆ, *Feld.*, Wien. Ent. Mon. vi. p. 74 (1862).  
 EUPLÆINÆ, *Moore*, Lep. Cey. i. p. 1 (1881).

Genus 1, DANAIIS, *Latr.*

- Enc. Meth. ix. p. 10 (1819); *Bois.-Lec.*, Lep. Am. Sept. p. 133  
 (1833); *Doubl.*, Gen. D. L. p. 89 (1843-50); *Trim.*, Rhop. Afr.  
 Aust. p. 84 (1862); *Butl.*, Proc. Z. Soc. pp. 43, 171 (Monograph)  
 (1866); *Godm. and Salvin.*, Biol. Centr. Am. Rhop. p. 1  
 (1879).  
 DANAIDA, *Latr.*, Hist. Nat. Crust. Ins. xiv. p. 108 (1805).  
 DANAUS, *Latr.*, Gen. Crust. Ins. iv. p. 201 (1809); *Moore*, Proc. Z.  
 Soc. p. 201 (Monograph) (1883).  
 RADENA, *Moore*, Lep. Cey. p. 3, part (1880-1).  
 TIRUMALA, *Moore*, *l.c.* 4, part (1880-1).  
 PARANTICA, *Moore*, *l.c.* 7, part (1880-1).  
 SALATURA, *Moore*, *l.c.* 5, part (1880-1).  
 CHITTIRA, *Moore*, *l.c.* 8, part (1880-1).

1. **D. Hamata**, *MacL.* (*Euplœa*, *H.*), King's Aust. Sydney to  
 ii. p. 451, n. 147 (1827); *Kirb.*, Cat. Cape York.  
 D. L. p. 4, 639 (1871); *Semp.*, Mus.  
 Godf. xiv. Lep. p. 3, t. 8, f. 1, 2, ♂  
 (1878); *Moore* (*Tiru. H.*), Proc. Z. Soc.  
 p. 232 (1883).  
 D. AUSTRALIS, *Blanch.*, Voy. Pol. Sud. Ins.  
 p. 388, t. 2, f. 5, 6 (1837-40).

2. **D. Affinis**, *Fab.* (*Pap. A.*), Syst. Ent. p. 511, n. 291 (1775); *Sp. Ins.* p. 102, n. 447 (1781); *Mant. Ins.* p. 55, n. 542 (1787); *Ent. Syst.* iii. p. 58, n. 181 (1793); *Don.* (*Pap. A.*), *Ins. India* t. 25, f. 2 (1800); *Kirb.*, *Cat. D. L.* p. 6 (1871); *Semp.*, *Mus. Godff.* xiv. *Lep.* p. 4 (1878); *Moore* (*Sal. A.*), *Proc. Z. Soc.* p. 243 (1883).  
**EUP. CHIONIPPE**, *Hubn.*, *Samml. Ex. Schm.* (1806-1824).  
**D. CECILIA**, *Boug.*, *Voy. Thet.* t. 44, f. 1, 1 bis. (1837).  
**SAL. NIGRITA**, *Moore*, *Proc. Z. Soc.* p. 243 (1883).
3. **D. Petilia**, *Stoll.* (*Pap. P.*), *Supp. Cramer's* *Pap. Ex.* p. 132, t. 28, f. 3 (1787-91); *Godt.*, *Enc. Meth.* ix. p. 189, n. 41 (1819); *D. and H.*, *Gen. D. L. i.* p. 92 (1846-50); *Misk.*, *Trans. E. Soc.* p. 244 (1874); *Kirb.*, *Cat. D. L.* p. 6 (1871); *Butl.*, *Trans. E. Soc.* p. 8 (1875); *Semp.*, *Mus. Godff.* xiv. *Lep.* p. 5 (1878); *Moore*, (*Limnas, P.*), *Proc. Z. Soc.* p. 239 (1883); *Mast.*, *Trans. L. Soc. N.S.W.* ser. 2, ii. p. 1376 (1887); *Misk.*, *l.c.* iv. p. 119 (1889); *l.c.* v. p. 142 (1890).  
**D. CHRYSIPPUS**, *Tep.*, *Trans. R. Soc. S. Aust.* iv. p. 28 (1882).
4. **D. Erippus**, *Cram.* (*Pap. E.*), *Pap. Ex.* i. t. 3 A. B. (1775); *Kirb.*, *Cat. D. L.* p. 7 (1871); *Guest.*, *Trans. R. Soc. S. Aust.* vol. viii. p. 61 (1886).  
**D. PLEXIPPUS**, *p. Lin.* (*Pap. P.*), *Mus. Ulr.* p. 262 (1764); *Fab.* (*Pap. P.*), *Sp. Ins.* p. 55, n. 243 (1781); *Cram.* (*Pap. P.*), *Pap. Ex.* iii. t. 206, E. F. (1782); *Esch.* (*Idea. P.*), *Kotzeb. Reise* iii. p. 209, t. 7, f. 14 a, b (1821); *Moore* (*Anosia, P.*), *Proc. Z. Soc.* p. 234 (1883).  
**D. ARCHIPPUS**, *Lin.* (*Pap. A.*), *Syst. Nat.* i. 2 p. 767 (1767); *Fab.* (*Pap. A.*), *Ent. Syst.* iii. 1, p. 49, n. 150 (1793); *Smith and Abb.*, *Lep. Georgia* i. t. 6 (1797); *Bois. Lec.*, *Lep. Am. Sept.* p. 137, t. 40 (1833); *Misk.*, *Ent. Mo. Mag.* p. 17 (1871); *Ober.*, *Ann. Mus. Gen.* xii. p. 456, n. 20 (1878).  
**D. ARCHIPPE**, *Godt.*, *Enc. Meth.* ix. p. 184, n. 28 (1819).
- Hunter River to Cape York.
- S. Australia, Victoria, Newcastle to C. York, Port Darwin.
- All the colonies, World-wide.

ANOSIA MEGALIPPE, *Hub.*, Samml. Ex. Schmett. (1806-24).

I have adopted Cramer's name for this species in preference to that of Linne, as some confusion has arisen from the difficulty of identifying the species from the descriptions of the latter, whereas it is readily distinguished with accuracy by the figures of the former.

5. **D. Genutia**, *Cram.* (*Pap. G.*), *Pap. Ex.* iii. t. 206, C. D. (1782); *Misk.*, *Proc. L. Soc. N.S.W.* ser. 2, vol. v. p. 142 (1890); *Kirb.*, *Cat. D. L.* p. 5 (1871).

N. W. Australia,  
East Indies.

D. PLEXIPPUS, *Lin.* (*Pap. P.*), *Mus. Ulr.* p. 262 (1764); *Syst. Nat.* i. 2, p. 767, n. 117 (1767).

D. PLEXIPPE, *Godt.*, *Enc. Meth.* ix. p. 186, n. 35 (1819).

Cramer's name is preferred for this species for the same reason as given in the preceding one.

### Genus 2, EUPLŒA, *Fab.*

Ill. *Mag.* vi. p. 280 (1808); *Doubl.*, *Gen. D. L.* p. 86 (1846-50); *Trim.*, *Rhop. Afr. Aust.* p. 83 (1862); *Butl.*, *Proc. Z. Soc.* p. 268 (1866); *Jour. Lin. Soc. Zool.* xiv. p. 290 (1878); *Moore p.*, *Lep. Cey.* p. 11 (1880-1); *Proc. Z. Soc.* p. 253 (1883); *Dist.*, *Rhop. Malay.* p. 20 (1882-6); *Misk.*, *Proc. L. Soc. N.S.W.* ser. 2, vol. iv. p. 1037 (1889).

CALLIPLŒA, *Butl. p.*, *Trans. Ent. Soc.* p. 1 (1875).

NARMADA, *Moore p.*, *Lep. Cey.* p. 13 (1881).

MACROPLŒA, *Butl. p.*, *Jour. L. Soc. Zool.* xiv. p. 292 (1878); *Moore p.*, *Lep. Cey.* p. 9 (1880-1).

ISAMIA, *Moore p.*, *Ann. M. Nat. H.* p. 45 (1877); *Lep. Cey.* p. 10 (1880-1).

1. **E. Niveata**, *Butl.* (*Call. N.*), *Trans. Ent. Soc.* p. 2 (1875); *Kirb.*, *Cat. D. L. Supp.* p. 693 (1877); *Butl.* (*Call. N.*), *Jour. Lin. Soc. Zool.* xiv. p. 296 (1878); *Moore* (*Call. N.*), *Proc. Z. Soc.* p. 295 (1883); *Misk.*, *Proc. L. Soc. N.S.W.* ser. 2, iv. p. 1039 (1889).

Cape York.

2. **E. Tulliolus**, *Fab.* (*Pap. T.*), *Ent. Syst.* iii. 1, p. 41, n. 103 (1793); *Godt.* (*Dan. T.*), *Enc. Meth.* ix. p. 181 (1819); *Don.*, *Nat. Rep.* ii. t. 55, f. 1 (1824); *Macleay*, *King's Aust.* ii. p. 461 (1827); *Doubl. and Hew.*, *Gen. D. L.* p. 88, n. 26 (1846-50); *Butl.*, *Proc. Z. Soc.* p. 290, n. 64 (1866); *Kirb.*, *Cat. D. L.* p. 14 (1871); *Butl.* (*Call. T.*), *Jour. L. Soc. Zool.* xiv. p. 296 (1878); *Semp.*, *Mus.*

Rockhampton  
to Cape  
York, Fiji.

- Godf. xiv. Lep. p. 142 (1878); *Moore* (*Call. T.*), Proc. Z. Soc. p. 295 (1883); *Misk.*, Proc. L. Soc. N.S.W. ser. 2, iv. p. 1039 (1889).
- E. SAUNDERSII, *Feld.*, Reise Nov. Lep. ii. p. 322, n. 439 (1867).
- \*3. **E. Darchia**, *Macleay* (*Dan. D.*), King's Aust. ii. p. 462, n. 149 (1827); *Kirb.*, Cat. D. L. p. 13 (1871); *Butl.*, Jour. L. Soc. Zool. xiv. p. 296 (1878); *Moore* (*Call. D.*), Proc. Zool. Soc. p. 295 (1883); *Misk.*, Proc. L. Soc. N.S.W. ser. 2, iv. p. 1039 (1889). Port Essington.
- E. PRIAPUS, *Butl.*, Proc. Z. Soc. p. 291, n. 67, t. 29, f. 2 (1866); Trans. E. Soc. p. 2 (1875); (*Call. P.*), Jour. L. Soc. Zool. xiv. p. 296 (1878); *Moore* (*Call. P.*), Proc. Z. Soc. p. 295 (1883).
4. **E. Misenus**, *Misk.*, Proc. L. Soc. N.S.W. ser. 2, iv. p. 1039 (1889). Cape York.
5. **E. Hippias**, *Misk.*, l.c. 1040 (1889). Cape York.
- \*6. **E. Viridis**, *Butl.* (*Salpinx, V.*), Ann. Nat. Hist. (5) x. p. 38 ♀ (1882); *Moore* (*Saphara, V.*), Proc. Z. Soc. p. 298 (1883); *Misk.*, Proc. L. Soc. N.S.W. ser. 2, iv. p. 1041 (1889). Thursday Island.
7. **E. Sylvester**, *Fab.* (*Pap. S.*), Ent. Syst. iii. 1, p. 41, n. 104 (1793); *Don.*, Nat. Rep. iv. t. 129 (1826); *Doubl. and Hew.*, Gen. D. L. p. 88, n. 25 (1846-50); *Butl.*, Proc. Z. Soc. p. 290 (1866); *Kirb.*, Cat. D. L. p. 14 (1871); *Westw.*, Trans. E. Soc. p. 108 (1872); *Semp.*, Mus. Godff. xiv. Lep. p. 6, n. 7 (1878); *Butl.*, (*Stictoplæa, S.*), Jour. L. Soc. Zool. xiv. p. 303 (1878); *Moore* (*Doricha, S.*), Proc. Z. Soc. p. 318 (1883); *Misk.*, Proc. L. Soc. N.S.W. ser. 2, iv. p. 1041 (1889). Mackay to Cape York.
- DAN. SYLVESTRIS, *Godt.*, Enc. Meth. ix. p. 182, n. 20 (1819).
- E. PELOR, *Doubl. and Hew.*, Gen. D. L. t. 11, f. 1 (1846-50); *Butl.*, Proc. Z. Soc. p. 300, n. 91 (1866); *Chenu.*, Enc. D'Hist. Nat. p. 64, f. 153 (1869); *Butl.* (*Stictoplæa, P.*), Jour. L. Soc. Zool. xiv. p. 303 (1878); *Moore* (*Doricha, P.*), Proc. Z. Soc. p. 318 (1883).
- E. MELPOMENE, *Butl.*, Proc. Z. Soc. p. 300, n. 92, p. 298, f. 2 (1866).



8. **E. Dardanus**, *Misk.*, Proc. L. Soc. N.S.W. ser. 2, iv. p. 1041 (1889). Cape York.
9. **E. Crithon**, *Misk.*, l.c. 1042 (1889). Cape York.
10. **E. Boreas**, *Misk.*, l.c. 1043 (1889). Cardwell.
- \*11. **E. Monilifera**, *Moore* (*Gamatoba, M.*), Proc. Z. Soc. p. 262 (1883). Thursday Island.
12. **E. Amycus**, *Misk.*, Proc. L. Soc. N.S.W. ser. 2, iv. p. 1044 (1889). Cape York.
13. **E. Corinna**, *Macleay* (*Dan. C.*), King's Aust. ii. p. 462, n. 150 (1827); *Bull.*, Jour. L. Soc. Zool. xiv. p. 299 (1878); *Kirb.*, Cat. D. L. p. 11 (1871); *Moore* (*Charapa, C.*), Proc. Z. Soc. p. 270 (1883); *Misk.*, Proc. L. Soc. N.S.W. ser. 2, iv. p. 1044 (1889); *Edwards, H.*, Victorian Natur. p. 4 (June, 1890). Sydney to Cape York.
- E. ANGASII**, *Feld.*, Reise Nov. Lep. ii. p. 343, n. 476 (1867); *Herr-Schf.*, Stett. Ent. Zeit. p. 69, t. 2, f. 7 (1869); *Ex. Schmett.* ii. f. 108, ♂ (1869); *Semp.*, Mus. Godff. xiv. Lep. p. 141 (1879); *Moore* (*Charapa, A.*), Proc. Z. Soc. p. 270 (1883).
- E. LEWINII**, *Feld.*, Reise Nov. Lep. ii. p. 345, n. 478 (1867); *Moore* (*Ch. L.*), Proc. Z. Soc. p. 270 (1883).
14. **E. Euclus**, *Misk.*, Proc. L. Soc. N.S.W. ser. 2, iv. p. 1045 (1889). Cape York.
- \*15. **E. Boisduvalii**, *Lucas*, Rev. Zool. p. 321 (1853); *Bull.*, Proc. Z. Soc. p. 302, n. 90 (1866); *Kirb.*, Cat. D. L. p. 16 (1871); *Moore* (*Deragena, B.*), Proc. Z. Soc. p. 272 (1883); *Misk.*, Proc. L. Soc. N.S.W. ser. 2, iv. p. 1046 (1889). Australia.
- \*16. **E. Eichorni**, *Staud.*, Ex. Schmett. p. 53, T. xxvi. (1885)?; *Misk.*, Proc. L. Soc. N.S.W. ser. 2, iv. p. 1046 (1889). N. Queensland.

Genus 3, *HAMADRYAS*, *Bois.*

Voy. Astr. Lep. p. 91 (1832); *Doubl.*, Gen. D. L. p. 134 (1846-50); *Moore*, Proc. Z. Soc. p. 253 (1883).

1. **H. Zoilus**, *Fab.* (*Pap. Z.*), Syst. Ent. p. 480, n. 163 (1775); Sp. Ins. p. 53, n. 229 (1781); Mant. Ins. p. 25, n. 265 (1787); Ent. Syst. iii. p. 42, n. 128 (1793); *Bois.*, Voy. Astr. Lep. p. 91 (1832); *Doubl. and Hew.*, Gen. D. L. t. 18, f. 1 (1846-50); *Kirb.*, Cat. D. L. p. 18 (1871); *Semp.*, Cardwell to Cape York, N. Guinea.

- Mus. Godf. xiv. Lep. p. 7 (1878); *Ober.*,  
Ann. Mus. Gen. xii. p. 462, n. 42 (1878);  
*Moore*, Proc. Z. Soc. p. 256 (1883).  
NYMPHALIS NAIS, *Guer.*, Voy. Coq. t. 15, f. 3  
(1829).  
STALACTIS NEDUSIA, *Hubn.*, Zutr. Ex.  
Schmett. f. 799, 800 (1832).

Sub-Family II., SATYRINÆ, *Bates*.

- Jour. Ent. ii. p. 176 (1864); *Moore*, Lep. Cey. i. p. 13 (1881); *Dist.*,  
Rhop. Malay. p. 37 (1882-6).  
SATYRIDÆ, *Swain.*, Cab. Cycl. pp. 86, 93 (1840); *Westw.*, Gen. D. L.  
p. 352 (1850-2); *Trim.*, Rhop. Afr. Aust. p. 184 (1862).

Genus 1, MELANITIS, *Fab.*

- Ill. Mag. vi. p. 282 (1807); *Moore*, Lep. Cey. i. p. 14 (1881); *Dist.*,  
Rhop. Malay. p. 40 (1882-6).  
HIPIO, *Hubn.*, Verz. bek. Schmett. p. 56 (1816).  
CYLLO, *Bois.*, Voy. Astr. Lep. p. 140 (1832); Faun. Mad. p. 57  
(1833); *Westw.*, Gen. D. L. p. 360 (1850-2); *Trim.*, Rhop. Afr.  
Aust. p. 186 (1866).

1. **M. Leda**, *Lin.* (*Pap. L.*), S. N. i. p. 474, n. 102  
(1758); Syst. Nat. i. 2, p. 773, n. 151  
(1767); *Drury*, Ex. Ins. i. t. 15, f. 5, 6  
(1773); *Cram.*, Pap. Ex. iii. t. 196, C. D.  
(1780); *Lc.* iv. t. 292, A. (1782); *Fab.*,  
Ill. Mag. vi. p. 282 (1807); *Hubn.*  
(*Oreas Marmorata*, *L.*), Samml. Ex.  
Schmett. i. t. xci. f. 1-4 (1806-16);  
*Godt.* (*Satyrus*, *L.*), Enc. Meth. ix. p.  
478, n. 4, t. 28, f. 1 (1819); *Bois.*  
(*Cyllo*, *L.*), Voy. Astr. Lep. p. 142, n. 3  
(1832); *Westw.* (*Cyllo*, *L.*), Gen. D. L.  
p. 361, n. 1 (1850-2); *Moore*, Cat. Lep.  
Ins. E. I. C. p. 223, n. 461 (1857); *Hew.*  
(*Cyllo*, *L.*), Jour. L. Soc. Zool. viii. p. 144  
(1865); *Butl.*, Ann. Nat. Hist. ser. iii.  
vol. xix. p. 51 (1867); Cat. Saty. B. M.  
p. 1, n. 1 (1868); Cat. Fab. Lep. B. M.  
p. 9, n. 1 (1869); *Kirb.*, Cat. D. L. p. 43,  
(1871); *Snell* (*Cyllo*, *L.*), Tijd. Ent. xix.  
p. 145, n. 9 (1876); *Lc.* xx. p. 66 (1877);  
*Lc.* xxi. p. 6, n. 17 (1878); *Butl.*, Trans.  
L. Soc. Zool. ser. 2, i. p. 537, n. 1 (1877);  
*Kirb.*, Cat. D. L. Supp. p. 699 (1877);  
*Semp.*, Mus. Godf. xiv. Lep. p. 7 (1878);  
*Ober.*, Ann. Mus. Gen. xii. p. 462, n. 44  
(1878); *Moore*, Lep. Cey. p. 15, t. 10,  
f. 1 a, b (1880-1); *de Nic.*, Butl. Ind. i.

N. S. Wales,  
Queensl'd,  
Polynesia,  
Papua,  
Malayana,  
Java, India,  
Ceylon,  
Africa,  
Mauritius.

- p. 252 (1882); *Dist.*, Rhop. Malay. p. 41, t. 4, f. 10 (1882-6); *Maik.*, Trans. E. Soc. p. 137 (1888).
- M. ISMENE, *Cram.* (*Pap. I.*), Pap. Ex. i. t. 26, A. B. (1779); *Fab. Sp. Ins.* pp. 84, 85, n. 370, 371, 376 (1781); *Mant. Ins.* pp. 45, 46, n. 448, 449, 454 (1787); *Ent. Syst.* iii. pp. 106, 108, n. 327, 328, 333 (1793); *Butl.*, Cat. Saty. B. M. p. 2 (1868); *Cat. Fab. Lep. B. M.* p. 9 (1869); *Wood-Mason and de Nic.*, Jour. As. Soc. Beng. l. p. 244, n. 8 (1881); *Moore*, Proc. Z. Soc. p. 824 (1878); *Lep. Cey.* p. 14, t. 10, f. 2 a, b (1880-1); *de Nic.*, Butt. Ind. i. p. 256 (1882); *Dist.*, Rhop. Malay. p. 42, t. 4, f. 9, 11, 12 (1882-6).
- M. BANKSIA, *Fab.*, Syst. Ent. p. 499, n. 243 (1775); *Don.* (*Pap. B.*), Ins. N. Holl. t. 25, f. 1 (1805); *Godt.* (*Satyrus, B.*), Enc. Meth. ix. p. 477, n. 3 (1819); *Westw.* (*Cyllo, B.*), Gen. D. L. p. 361, n. 3 (1851); *Moore*, Cat. Lep. M. E. I. C. p. 222, n. 462 (1857); *Butl.*, Cat. Fab. Lep. B. M. p. 9 (1869).
- M. SOLANDRA, *Fab.*, Syst. Ent. p. 500, n. 244 (1775); *Don.*, Ins. N. H. t. 23, f. 1 (1805); *Bois.*, Voy. dans l'Océanie Ent. part i. p. 142 (1832-5); *Butl.*, Cat. Fab. Lep. B. M. p. 9 (1869).
- M. MYCENA, *Cram.* (*Pap. M.*), Pap. Ex. iv. t. 291, F. (1782).
- M. ARCENSIA, *Cram.* (*Pap. A.*), Pap. Ex. iv. t. 292, C. (1782).
- M. PHEDIMA, *Cram.* (*Pap. P.*), Pap. Ex. iv. t. 292, B. (1782); *Butl.*, Cat. Saty. B. M. p. 3 (1868).
- M. ZITENIUS, *Herbst.*, Naturs. Schmett. viii. p. 5, t. 182, f. 1, 2 (1796).
- M. HELENA, *Westw.* (*Cyllo, H.*), Gen. D. L. p. 361, n. 2 (1851).
- M. SUYUDANA, *Moore*, Cat. Lep. E. I. C. p. 224, n. 466 (1857); *Butl.*, Cat. Saty. B. M. p. 4, n. 5 (1868).
- M. VAMANA, *Moore*, Cat. Lep. E. I. C. p. 223, n. 463 (1857); *Butl.*, Cat. Saty. B. M. p. 3, n. 2 (1868).
- M. GOKALA, *Moore*, Cat. Lep. E. I. C. p. 224, n. 468 (1857); *Butl.*, Cat. Sat. B. M. p. 4, n. 8 (1868).

- M. AMBASARA, *Moore*, Cat. Lep. E. I. C. p. 223, n. 464 (1857); *Butl.*, Cat. Sat. B. M. p. 4, n. 3 (1868).
- M. BELA, *Moore*, Cat. Lep. E. I. C. p. 223, n. 465 (1857); *Butl.*, Cat. Sat. B. M. p. 4, n. 4 (1868).
- M. VARAHA, *Moore*, Cat. Lep. E. I. C. p. 224, n. 467 (1857); *Butl.*, Cat. Sat. B. M. p. 4, n. 6 (1868).
- M. BOISDUVALIA, *Feld.*, Diag. Lep. p. 43, n. 96 (1859); (*Cyllo*, *B.*), Wein. Ent. Mon. vii. p. 123, n. 96 (1863).
- M. TAITENSIS, *Feld.* (*Cyllo*, *T.*), Verh. Zool. Bot. Ges. xii. p. 493, n. 186 (1862); *Butl.*, Cat. Sat. B. M. p. 2 (1868).
- M. ATRAX, *Feld.* (*Cyllo*, *A.*), Wien. Ent. Mon. vii. p. 122, n. 94 (1863).
- M. MYCERINA, *Guén.* (*Cyllo*, *M.*), Maill. Ruén. Lep. ii. p. 16 (1863).
- M. ERICHSONIA, *Feld.* (*Cyllo*, *E.*), Wien. Ent. Mon. vii. p. 123, n. 95 (1863); *Butl.*, Cat. Sat. B. M. p. 4, n. 7 (1868).
- M. FULVESCENS, *Guén.* (*Cyllo*, *F.*), Maill. Réunion. Lep. ii. p. 15 (1863); *Feld.* (*Cyllo*, *F.*), Reise Nov. Lep. iii. p. 465, n. 788 (1867).
- M. ASWA, *Moore*, Proc. Z. Soc. p. 769 (1865); *Butl.*, Cat. Sat. B. M. p. 5, n. 10 (1868).
- M. TRISTIS, *Feld.* (*Cyllo*, *T.*), Reise Nov. Lep. iii. p. 464, n. 785 (1867); *Butl.*, Cat. Sat. B. M. p. 2 (1868).
- M. DURYODAMA, *Feld.* (*Cyllo*, *D.*), Reise Nov. Lep. iii. p. 464, n. 786 (1867); *Butl.*, Cat. Sat. B. M. p. 2 (1868).
- M. OBSOLETA, *Feld.* (*Cyllo*, *O.*), Reise Nov. Lep. iii. p. 464, n. 787 (1867); *Butl.*, Cat. Sat. B. M. p. 3 (1868).

Genus 2, *XENICA*, *Westw.*

- (*LASSIOMATTA*, *Sec. XENICA*), Gen. D. L. p. 387, note (1850-2); *Butl.*, Trans. Ent. Soc. p. 8 (1875); *Oll.*, Proc. L. Soc. N.S.W. ser. 2, ii. p. 976, note (1887).
- GEITONEURA ET ARGYNNINA*, *Butl.*, Ann. N. Hist. ser. 3, xix. pp. 164, 165 (1867).

1. **X. Achanta**, *Don.* (*Pap. A.*), Ins. N. H. t. 22, f. 2 (1805); *Godt.* (*Sat. A.*), Enc. Meth. ix. p. 500, n. 82 (1819); *Bois.* (*Sat. A.*) Voy. Astr. Lep. pt. i. p. 147 (1832); *Westw.* (*Las. A.*), Gen. D. L. p. 387, S. Australia, Victoria, Newcastle, S. Queensland.



- n. 22 (1850-2); *Moore*, Cat. Lep. Ins. M. E. I. C. i. p. 228, n. 479 (1857); *Butl.* (*Geit. A.*), Ann. N. H. ser. 3, xix. p. 165, n. 2 (1867); *Kirb.*, Cat. D. L. p. 76 (1871); *Semp.* (*Geit. A.*), Mus. Godf. Lep. xiv. p. 10 (1878); *Staud.*, Ex. Schmett. t. 81 (1887).
- TISIPHONE ACHANTHE, *Hubn.*, Zutr. Ex. Schmett. f. 267, 268 (1823).
- LAS. OCREA, *Guest.*, Trans. R. Soc. S. A. v. p. 35 (1882).
2. **X. Klugii**, *Guer.* (*Sat. K.*), Voy. Coq. t. 17, f. 2 (1829); *Butl.* (*Geit. K.*), Ann. N. H. ser. 3, xix. p. 165, n. 1 (1867); *Kirb.*, Cat. D. L. p. 76 (1871); *Semp.* (*Geit. K.*), Mus. Godf. Lep. xiv. p. 10 (1878); *Tep.*, Trans. R. Soc. S. A. iv. p. 28 (1882). K. G. Sound, Adelaide, Tasmania, Victoria.
- SAT. SINGA, *Bois.*, Voy. Astr. Lep. p. 145, n. 3, (1832); *Feisth.*, Rev. Zool. t. 19, f. 1, 1 a (1839); *Guer.*, Voy. "Favorite," Supp. t. 3, f. 1, 1 a (1839); *Westw.* (*Las. S.*), Gen. D. L. p. 387, n. 23 (1850-2).
- LAS. PHILEROPHE, *part.*, *Westw.*, l.c. 19 (1851).
3. **X. Hobartia**, *Westw.* (*Las. H.*), Gen. D. L. p. 387, n. 21 (1850-2); *Butl.* (*Argyn. H.*), Ann. N. H. ser. 3, xix. p. 165, n. 1 (1867); *Kirb.*, Cat. D. L. p. 76 (1871). Tasmania, Victoria, N. S. Wales.
- LAS. LASUS, *Hew.*, Trans. E. Soc. ser. 3, ii. p. 248, n. 9, t. 16, f. 5 (1864).
4. **X. Lathoniella**, *Westw.* (*Las. L.*), Gen. D. L. p. 387, n. 25, note (1850-2); *Butl.* (*Argyn. L.*), Ann. N. H. ser. iii. xix. p. 165, n. 2, t. 4, f. 6 (1867); *Kirb.*, Cat. D. L. p. 76 (1871); *Oll.*, Aust. Butt. p. 20, figure (1889). Tasmania, Victoria, N. S. Wales.
5. **X. Orichora**, *Meyr.*, Ent. Mo. Mag. p. 82 (1885). Mt. Kosciusko, Victoria.
6. **X. Kershawi**, *Misk.*, Trans. Ent. Soc. p. 452 (1876); *Kirb.*, Cat. D. L. Supp. p. 844 (1877). Gippsland, Vic., Liverpool Plains, N. S. Wales.
7. **X. Ella**, *Oll.*, Proc. L. Soc. N.S.W. ser. 2, ii. p. 976 (1887). N. S. Wales.
8. **X. Corrae**, *Oll.*, Proc. L. Soc. N.S.W. ser. 2, iv. p. 621 (1889). Mount Kosciusko, Victoria.
- var. *FULVA*, *Oll.*, l.c.
9. **X. Leprea**, *Hew.* (*Las. L.*), Trans. E. Soc. ser. 3, ii. p. 249, n. 10, t. 16, f. 6, 7 (1864); *Kirb.*, Cat. D. L. p. 76 (1871). Tasmania.

Genus 3, *EPINEPHILE*, Hubn.

Verz. bek. Schmett. p. 59 (1816); *Herr-Schff.*, Schmett. Eur. i. (1844); *Butl.*, Trans. E. Soc. p. 8 (1875).

1. **E. Abeona**, *Don.* (*Pap. A.*), Ins. N. H. t. 22, f. 1 (1805); *Godt.* (*Sat. A.*), Enc. Meth. ix. p. 490, n. 72 (1819); *Bois.* (*Sat. A.*), Voy. Astr. Lep. p. 144, n. 1 (1832); *Doub. E.* (*Hipp. A.*), List. Lep. B. M. i. p. 134 (1844); *Westw.* (*Las.-Xenica-A.*), Gen. D. L. p. 387, n. 24 (1850-2); *Wallen.* (*Heter. A.*), Nov. Gen. Lep. Kongl. Wet. Akad. Forhandl. p. 78 (1858); *Kirb.*, Cat. D. L. p. 76 (1871); *Semp.* (*Xen. A.*), Mus. Godff. Lep. xiv. p. 8 (1878); *Staud.*, Ex. Schmett. t. 81, (1887); *Math.*, Trans. E. Soc. p. 141, t. 6, f. 8 (1888).

Victoria,  
N. S. Wales.

OREAS MARMOREA ZELINDE, *Hubn.*, Samml. Ex. Schmett. i. t. 92, f. 1, 2 (1806).

TISIPHONE ZELINDE, *Hubn.*, Verz. bek. Schmett. i. p. 60, n. 574 (1816).

2. **E. Joanna**, *Butl.* (*Enodia, J.*), Ann. N. H. ser. 3, xvii. p. 286 (1866); *l.c.* xviii. t. 4, f. 8 (1867); *Kirb.*, Cat. D. L. p. 76 (1871).
3. **E. Helena**, *Oll.*, Proc. L. Soc. N.S.W. ser. 2, iii. p. 395 (1888); *Aust. Butt.* p. 21, figure (1889).
4. **E. Rawnsleyi**, *Misk.*, Trans. E. Soc. p. 454 (1876).

N. S. Wales.

Mt. Bellen-  
den-Ker, N.  
Queensland.  
Mooloolah, S.  
Queensland.

Genus 4, *HETERONYMPHA*, Wallen.

Svensk. Akad. Forh. p. 79 (1858); *Butl.*, Cat. B. M. Saty. p. 99 (1868).

HIPPARCHOIDES, *Butl.*, Ann. N. H. ser. 3, xix. p. 125, t. 3 (1867).

1. **H. Merope**, *Fab.* (*Pap. M.*), Syst. Ent. p. 495, n. 228 (1775); *Sp. Ins.* p. 78, n. 346 (1781); *Mant. Ins.* p. 40, n. 408 (1787); ♀ Ent. Syst. iii. 1, p. 99, n. 306 (1793); *Don.* (*Pap. M.*), Ins. N. H. t. 28, f. 2 (1805); *Godt.* (*Sat. M.*), Enc. Meth. ix. p. 500, n. 80 (1819); *Bois.* (*Sat. M.*), Voy. Astr. Lep. p. 146, n. 4 (1832); *Doub. E.* (*Las. M.*), List. Lep. B. M. i. p. 134 (1844); *Westw.* (*Las. M.*), Gen. D. L. p. 387, n. 18 (1850-2); *Wallen.*, Nov. Gen. Lep. Kongl. Wet. Ak. Forh. p. 78 (1858); *Butl.* (*Hipp. M.*), Ann. N. H. ser. 3, xix. p. 126, n. 1 (1867);

W. Australia,  
S. Australia,  
Tasmania,  
Victoria,  
N. S. Wales,  
Brisbane.

Cat. B. M. Saty. p. 99 (1868); B. M. Cat. Fab. Lep. p. 26 (1869); *Kirb.*, Cat. D. L. p. 79 (1871); *Semp.*, Mus. Godff. Lep. xiv. p. 8 (1878); *Tep.*, Trans. R. Soc. S. Aust. iv. p. 28 (1882); *Staud.*, Ex. Schmett. t. 81 (1887).

OREAS NUBILA CENOMAIS, *Hubn.*, Samml. Ex. Schmett. i. t. 94, f. 1-4 (1806); (*Minois*, *Æ.*), Verz. bek. Schmett. p. 58, n. 552 (1816).

♀ PAP. THEMIS, *Dalm.*, Anal. Ent. p. 42, n. 10 (1823).

♂ SAT. ARCHEMOR, *Godt.*, Enc. Meth. ix. p. 500, n. 82 (1819).

\*2. **H. Duboulayi**, *Butl.* (*Hipp. D.*), Ann. N. H. ser. 3, xix. p. 167 (1867); *Kirb.*, Cat. D. L. p. 79 (1871). W. Australia.

3. **H. Philerope**, *Bois.* (*Sat. P.*), Voy. Astr. Lep. p. 147, n. 5 (1832); *Feisth.*, Rev. Zool. t. 19, f. 2 (1839); *Guer.*, Voy. "Favorite," Supp. p. 16, t. 3, f. 2 (1839); *Butl.* (*Hipp. P.*), Ann. N. H. ser. 3, xix. p. 126, t. 3, f. 2 (1867); *Westw.* (*Las. P. part*), Gen. D. L. p. 387, n. 19 (1850-2); *Kirb.*, Cat. D. L. p. 79 (1871); *Semp.*, Mus. Godff. Lep. xiv. p. 8 (1878). W. Australia, Victoria, Liverpool Plains, N. S. Wales.

4. **H. Banksii**, *Leach* (*Hipp. B.*), Zool. Misc. i. p. 28, t. 10, f. 1, 2 (1814); *Doub. E.* (*Las. B.*), List. Lep. B. M. i. p. 134 (1847); *Westw.* (*Las. B.*), Gen. D. L. p. 387, n. 20 (1850-2); *Butl.* (*Hipp. B.*), Ann. N. H. ser. 3, xix. p. 126, n. 3 (1867); Cat. B. M. Saty. p. 100 (1868); *Kirb.*, Cat. D. L. p. 80 (1871). Victoria, S. Queensland.

SAT. GELANOR, *Godt.*, Enc. Meth. ix. p. 498, n. 73 (1819); *Bois.* (*Sat. G.*), Voy. Astr. Lep. p. 145, n. 2 (1832).

H. AFFINIS, *Lucas*, *T. P.*, Proc. L. Soc. N.S.W. ser. 2, iv. p. 1065 (1889).

5. **H. Cordace**, *Hubn.* (*Tisiphone*, *C.*), Zutr. Ex. Schmett. f. 798, 799 (1832); *Westw.* (*Las. C.*), Gen. D. L. p. 387, n. 13 (1850-2); *Kirb.*, Cat. D. L. p. 80 (1871). Victoria, Liverpool Plains, N. S. Wales.

6. **H. Digglei**, *Misk.*, Trans. E. Soc. p. 454 (1876); *Kirb.*, Cat. D. L. Supp. p. 844 (1877). Brisbane.

7. **H. Mirifica**, *Butl.* (*Las. M.*), Ann. N. H. ser. 3, xvii. p. 286 (1866); (*Hipp. M.*), *l.c.* xviii. p. 127, n. 4, t. 3, f. 1 (1867); *Kirb.*, Cat. D. L. p. 80 (1871). Newcastle, Penrith, N. S. Wales, Brisbane.

Genus 5, *MYCALESIS*, *Hubn.*

Verz. bek. Schmett. p. 54 (1816); *Westw.*, Gen. D. L. p. 392 (1850-2); *Trim.*, Rhop. Afr. Aust. p. 206 (1866); *Dist.*, Rhop. Malay. p. 47 (1882-6).

1. **M. Terminus**, *Fab.* (*Pap. T.*), Syst. Ent. p. 488, n. 200 (1775); *Sp. Ins.* p. 66, n. 297 (1781); *Mant. Ins.* p. 32, n. 364 (1787); *Ent. Syst.* iii. 1, p. 220, n. 687 (1793); *Don.* (*Pap. T.*), *Ins. N. H.* t. 28, f. 4 (1805); *Godt.* (*Sat. T.*), *Enc. Meth.* ix. p. 501, n. 84 (1819); *Bois.* (*Sat. T.*), *Voy. Astr. Lep.* p. 148, n. 8 (1832); *Westw.*, Gen. D. L. p. 394, n. 10 (1850-2); *Butl.*, *Proc. Z. Soc.* p. 720 n. 6, t. 718, f. 3, 3a (1867); *B. M. Cat. Fab. Lep.* p. 35 (1869); *Kirb.*, *Cat. D. L.* p. 92 (1871); *Butl.*, *Trans. E. Soc.* p. 8 (1875); *Semp.*, *Mus. Godff. Lep.* xiv. p. 8 (1878).

R'ekhampton  
to Cape  
York.

**PAP. REMULIA**, *Cram.*, *Pap. Ex.* iii. t. 237, f. F. G. (1782); *Godt.* (*Sat. R.*), *Enc. Meth.* ix. p. 501, n. 85 (1819); *Moore* (*Mydosama, R.*), *Trans. E. Soc.* p. 171 (1880).

- \*2. **M. Sirius**, *Fab.* (*Pap. S.*), Syst. Ent. p. 488, n. 201 (1775); *Sp. Ins.* p. 66, n. 298 (1781); *Mant. Ins.* p. 32, n. 345 (1787); *Ent. Syst.* iii. p. 220, n. 688 (1793); *Don.* (*Pap. S.*), *Ins. N. H.* t. 28, f. 3 (1805); *Godt.* (*Sat. S.*), *Enc. Meth.* ix. p. 500, n. 83 (1819); *Bois.* (*Sat. S.*), *Voy. Astr. Lep.* p. 148, n. 7 (1832); *Westw.* (*Cænon. S.*), Gen. D. L. p. 398, n. 26 (1850-2); *Butl.*, *Proc. Z. Soc.* p. 721, n. 7, p. 718, f. 1 (1867); *B. M. Cat. Sat.* p. 144, n. 80 (1868); *B. M. Cat. Fab. Lep.* p. 35 (1869); *Kirb.*, *Cat. D. L.* p. 92 (1871); *Moore* (*Mydosama, S.*), *Trans. E. Soc.* p. 173 (1880).

Australia,  
Moluccæ.

**PAP. ZACHLEUS**, *Fab.*, *Ent. Syst.* iii. 1, p. 217, n. 679 (1793); *Godt.* (*Sat. Z.*), *Enc. Meth.* ix. p. 512, n. 103 (1819); *Westw.* (*Las. Z.*), Gen. D. L. p. 387, n. 17 (1850-2); *Butl.*, *B. M. Cat. Sat.* p. 145 (1868); *B. M. Cat. Fab. Lep.* p. 35 (1869); *Moore* (*Mydosama, Z.*), *Trans. E. Soc.* p. 173 (1880).

**SAT. MANIPA**, *Bois.*, *Voy. Astr. Lep.* p. 150, n. 10 (1832); *Hew.*, *Jour. L. Soc. Zool.*



- viii. p. 146 (1865); *Westw.* (*Cænon. M.*) Gen. D. L. p. 398, n. 24 (1850-2); *Feld.*, Lep. Diag. p. 46, n. 100, note ( ); *Butl.*, B. M. Cat. Sat. p. 145 (1868).
- M. DAIDIS, *Hew.*, Ex. Butt. iii. Myc. t. 4, f. 22 (1862); *Butl.*, B. M. Cat. Sat. p. 145 (1868).
- \*3. M. Zia, *Butl.*, Entom. iv. p. 347 (1869); *Kirb.*, Cat. D. L. p. 644 (1871); *Moore* (*Calysisme, Z.*), Trans. E. Soc. p. 163 (1880). Queensland.
4. M. Perseus, *Fab.* (*Pap. P.*), Syst. Ent. p. 488, n. 199 (1775); Sp. Ins. p. 66, n. 296 (1781); Mant. Ins. p. 32, n. 343 (1787); Ent. Syst. iii. p. 219, n. 685 (1793); *Don.*, Ins. N. H. t. 26, f. 3 (1805); *Butl.*, Proc. Z. Soc. p. 719, n. 2, p. 718, f. 2 (1867); B. M. Cat. Sat. p. 133 (1868); B. M. Cat. Fab. Lep. p. 33 (1869); *Kirb.*, Cat. D. L. p. 88 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 9 (1878); *Moore* (*Calysisme, P.*), Trans. E. Soc. p. 163 (1880); *De Nic.*, Butt. Ind. i. p. 120 (1882). Cardwell to Cape York, Pt. Darwin.
- PAP. TABITHA, *Fab.*, Ent. Syst. iii. 1, p. 243, n. 756 (1793); *Butl.*, B. M. Cat. Fab. Lep. p. 33 (1869).
- PAP. PERIBÆA, *Fab.*, Gen. Ins. p. 261 (1776); *Butl.*, B. M. Cat. Sat. p. 38 (1868); B. M. Cat. Fab. Lep. p. 33 (1869); *Kirb.*, Cat. D. L. p. 93 (1871).
- SAT. PERIBAS, *Godt.*, Enc. Meth. ix. p. 486, n. 29 (1819).
- PAP. CLERIMON, *Fab.*, Ent. Syst. iii. 1, p. 217, n. 678 (1793); *Butl.*, Cat. Sat. B. M. p. 133 (1868); Cat. Fab. Lep. B. M. p. 33 (1869).
- PAP. OTREA, *Cram.*, Pap. Ex. iv. t. 314, A. B. (1782); *Hubn.*, Zutr. Ex. Schmett. f. 79, 80 (1818); *Westw.*, Gen. D. L. p. 394, n. 14 (1850-2); *Moore*, Cat. Lep. Mus. E. I. C. p. 230, n. 486 (1857); *Butl.*, Cat. Sat. B. M. p. 132 (1868).
- PAP. FRANCISCA, *Cram.*, Pap. Ex. iv. t. 326, E, F (1782); *Butl.*, Cat. Sat. B. M. p. 132 (1868).
- SAT. ZOPYRUS, *Koll.*, Hug. Kasch. iv. 2, p. 450, n. 8 (1848).
- M. ZOPHYRUS, *Westw.*, Gen. D. L. p. 394 (1850-2).

- M. VISALA, *Moore*, Cat. Lep. Mus. E. I. C. p. 230, n. 488 (1857); *Butl.*, Cat. Sat. B. M. p. 133 (1868).
5. **M. Infusca**, *Macl.*, *W.* (*Cæn. I.*), Proc. E. Soc. N.S.W. p. 53, n. 17 (1866); *Butl.*, B. M. Cat. Sat. p. 188 (1868); *Kirb.*, Cat. D. L. p. 100 (1871). Cape York, Pt. Darwin.
- M. MEDUS, *Semp.* (*nec Fab.*), Mus. Godf. Lep. xiv. p. 8 (1878).
6. **M. Modestus**, *Misk.*, Proc. L. Soc. N.S.W. ser. 2, v. p. 29 (1890). Cooktown.

Genus 6, *HYPOCYSTA*, *Westw.*

Gen. D. L. p. 397 (1850-2).

*HYPOCYSTA*, *Hew.* Ex. Butt. iii. p. 99 (1863).

1. **H. Euphemia**, *Doubl.-Westw.-Hew.* (*Cæn. E.*), Gen. D. L. p. 398, n. 28, t. 67, f. 3 (1850-2); *Butl.*, B. M. Cat. Sat. p. 168, n. 7 (1868); *Kirb.*, Cat. D. L. p. 101 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 10 (1878). Victoria, Sydney, Pt. Curtis.
2. **H. Adiante**, *Hubn.* (*Neonympha, A.*), Zutr. Ex. Schmett. f. 545, 546 (1825); *Butl.*, B. M. Cat. Sat. p. 167 (1868); *Kirb.*, Cat. D. L. p. 101 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 10 (1878). Sydney to Cape York.
3. **H. Irius**, *Fab.* (*Pap. I.*), Syst. Ent. p. 487, n. 196 (1775); Sp. Ins. p. 65, n. 293 (1781); Mant. Ins. p. 32, n. 340 (1787); Ent. Syst. iii. p. 158, n. 487 (1793); *Don.* (*Pap. I.*), Ins. N. H. t. 28, f. 1 (1805); *Godt.* (*Sat. I.*), Enc. Meth. ix. p. 548, n. 177 (1819); *Bois.* (*Sat. I.*), Voy. Astr. Lep. p. 155, n. 18 (1832); *Doubl., W. H.* (*Cæn. I.*), Gen. D. L. p. 398, n. 27 (1850-2); *Butl.*, B. M. Cat. Sat. p. 167 (1868); B. M. Cat. Fab. Lep. p. 37, n. 1 (1869); *Kirb.*, Cat. D. L. p. 101 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 10 (1878); *Staud.*, Ex. Schmett. t. 83 (1887). Sydney to Cape York.
4. **H. Metirius**, *Butl.*, Trans. E. Soc. p. 3 (1875); *Kirb.*, Cat. D. L. Supp. p. 708 (1877); *Semp.*, Mus. Godf. Lep. xiv. p. 10 (1878). Brisbane, Cardwell.
5. **H. Antirius**, *Butl.*, B. M. Cat. Sat. p. 168, n. 6, t. 4, f. 9 (1868); *Kirb.*, Cat. D. L. p. 101 (1871). Brisbane, Dawson R., N. W. Australia.
- var. LINEA, *Butl.*, B. M. Cat. Sat. p. 168 (1868).

6. **H. Epirius**, *Butl.*, Trans. E. Soc. p. 3 (1875); *Kirb.*, Cat. D. L. Supp. p. 708 (1877). | Brisbane.
- \*7. **H. Pseudirius**, *Butl.*, Trans. E. Soc. p. 3 (1875); *Kirb.*, Cat. D. L. Supp. p. 708 (1877); *Semp.*, Mus. Godf. Lep. xiv. p. 11 (1878). | Australia.
- \*8. **H. Undulata**, *Butl.*, Trans. E. Soc. p. 2 (1875); *Kirb.*, Cat. D. L. Supp. p. 708 (1877). | Champion Bay, W. Australia.

Genus 7, *YPETHIMA*, *Hubn.*

Verz. bek. Schmett. p. 63 (1816); *Westw.*, Gen. D. L. p. 394 (1850-2); *Trim.*, Rhop. Afr. Aust. p. 205 (1866); *Moore*, Lep. Cey. p. 24 (1880-1); *Dist.*, Rhop. Malay. p. 55 (1882-6).  
*YPETHIMA*, *Hew.*, Trans. E. Soc. ser. 3, ii. p. 283 (1865).

1. **Y. Arctous**, *Fab. (Pap. A.)*, Syst. Ent. p. 489, n. 202 (1775); *Sp. Ins.* p. 67, n. 304 (1781); *Mant. Ins.* p. 33, n. 353 (1787); *Ent. Syst.* iii. p. 222, n. 696 (1793); *Don. (Pap. A.)*, *Ins. N. H.* t. 24, f. 2 (1805); *Godt. (Sat. A.)*, Enc. Meth. ix. p. 552, n. 165 (1819); *Bois. (Sat. A.)*, *Voy. Astr. Lep.* p. 156, n. 19 (1832); *D. W. and H.*, Gen. D. L. p. 395, n. 7 (1850-2); *Hew. (Yphth. A.)*, Trans. E. Soc. ser. 3, ii. p. 283, n. 2 (1865); *Butl.*, B. M. Cat. Sat. p. 151, n. 17 (1868); B. M. Cat. Fab. Lep. p. 36, n. 2 (1869); *Kirb.*, Cat. D. L. p. 95 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 9 (1878). | Brisbane to Cape York.
- Y. ARCTOIDES**, *Hew.*, Trans. E. Soc. ser. 3, ii. p. 284, n. 3 (1865); *Butl.*, B. M. Cat. Sat. p. 151 (1868).

Sub-Family III., ACRÆINÆ, *Bates*.

*Jour. Ent.* ii. p. 176 (1864).

ACRÆIDÆ, *Doubl.*, Gen. D. L. p. 137 (1846-50).

Genus 1, *ACRÆA*, *Fab.*

*Ill. Mag.* vi. p. 284 (1807); *Latr.*, Enc. Meth. ix. p. 10 (1819); *Doubl.*, Gen. D. L. p. 137 (1846-50).

ACTINOTA and TELCHINIA, *Hubn.*, Verz. bek. Schmett. p. 27 (1816).

1. **A. Andromacha**, *Fab. (Pap. A.)*, Syst. Ent. p. 466, n. 102 (1775); *Sp. Ins.* p. 36, n. 150 (1781); *Mant. Ins.* p. 17, n. 172 (1787); *Ent. Syst.* iii. p. 182, n. 564 (1793); *Butl.*, B. M. Cat. Fab. Lep. p. 134 (1869); *Kirb.*, Cat. D. L. p. 131 | Sydney to Cape York, N. Guinea, Fiji, Samoa.

(1871); *Semp.*, Mus. Godf. Lep. xiv. p. 11 (1878); *Math.*, Trans. E. Soc. p. 143, t. 6, f. 14, 14a (1888); *Oll.*, Ann. N. H. p. 359 (1888).

A. ENTORIA, *Godt.*, Enc. Meth. ix. p. 231, n. 3 (1819).

A. THEODOTE, *Wallen*, Wien. Ent. Mon. iv. p. 36, n. 10 (1860); *Eng. Resa.* p. 353 (1861).

Sub-Family IV., NYMPHALINÆ, *Bates*.

*Jour. Ent.* ii. p. 176 (1864).

NYMPHALIDÆ, *Westw.*, Gen. D. L. p. 143 (1846-50).

Genus 1, CETHOSIA, *Fab.*

Ill. Mag. vi. p. 280 (1807); *Doubl.*, Gen. D. L. p. 150 (1846-50); *Moore*, Lep. Cey. p. 51 (1880-1); *Dist.*, Rhop. Malay. p. 170 (1882-6).

ALAZONIA, *Hubn.*, Verz. bek. Schmett. p. 46 (1816).

1. C. Chrysippe, *Fab.* (*Pap. C.*), Syst. Ent. p. 502, n. 252 (1775); *Sp. Ins.* p. 88, n. 387 (1781); *Mant. Ins.* p. 47, n. 467 (1787); *Ent. Syst.* iii. p. 112, n. 344, (1793); *Don.*, Ins. N. H. t. 24, f. 1 (1805); *Butl.*, B. M. Cat. Fab. Lep. p. 101, n. 4 (1869); *Kirb.*, Cat. D. L. p. 149 (1871); *Ober.*, Ann. Mus. Gen. xii. p. 458, n. 27 (1878).

Mackay to  
Cape York.

C. CHRYSOONOE, *Godt.*, Enc. Meth. ix. p. 249, n. 14 (1819); *Bois.*, Voy. Astr. Lep. p. 110, n. 2 (1832).

C. IMPERIALIS, *Butl.*, Ann. N. H. ser. 4, xviii. p. 124 (1876).

C. CYDIPPE, *Semp.* (*nec Lin.*), Mus. Godf. Lep. xiv. p. 11 (1878).

2. C. Cyane, *Drury* (*Pap. C.*), Ill. Ex. Ent. i. t. 4, f. 1 (1770); *Cram.* (*Pap. C.*), Pap. Ex. iv. t. 295 C. D. (1782); *Fab.* (*Pap. C.*), Syst. Ent. p. 503, n. 253 (1775); *Sp. Ins.* p. 89, n. 392 (1781); *Mant. Ins.* p. 48, n. 473 (1787); *Ent. Syst.* iii. p. 115, n. 352 (1793); *Don.* (*Pap. C.*), Ins. India, t. 35, f. 2 (1800); *Godt.*, Enc. Meth. ix. p. 247, n. 11, t. 34, f. 2 (1819); *Butl.*, B. M. Cat. Fab. Lep. p. 100, n. 1 (1869); *Kirb.*, Cat. D. L. p. 149 (1871); *de Nic.*, Butt. Ind. ii. p. 33 (1886).

Port Darwin,  
India, Java.



♂ PAP. PENTHESILIA, *Cram.*, Pap. Ex. ii. t. 145, B. C. (1779); *Fab.*, Sp. Ins. p. 88, n. 390 (1781); *Mant.* Ins. p. 48, n. 470 (1787); *Ent. Syst.* iii. p. 114, n. 349 (1793); *Godt.* (*Cet. P.*), Enc. Meth. ix. p. 248, n. 13 (1819); *Butl.*, B. M. Cat. Fab. Lep. p. 101, n. 2 (1869).

ALAZONIA SYMBIBLIS, *Hubn.*, Verz. bek. Schmett. p. 46, n. 421 (1816).

- \*3. **C. Lamacrkii**, *Godt.*, Enc. Meth. ix. p. 249, n. 16 (1819); *Luc.*, Lep. Ex. t. 54, f. 2 (1835); *Bois.*, Voy. Astr. Lep. p. 111, n. 3 (1832); *Sp. Gen.* i. t. 9, f. 5 (1836); *Kirb.*, Cat. D. L. p. 150 (1871).

N. W. Australia,  
Timor.

### Genus 2, CYNTHIA, *Fab.*

Ill. Mag. vi. p. 281 (1807); *Doubl.*, Gen. D. L. p. 212 (1846-50); *Moore*, Lep. Cey. p. 52 (1880-1); *Dist.*, Rhop. Malay. p. 183 (1882-6).

ANARTIA (part), *Hubn.*, Verz. bek. Schmett. p. 33 (1816).

1. **C. Ada**, *Butl.*, *M. R.*, Proc. Z. Soc. p. 686 (1873); *Kirb.*, Cat. D. L. Supp. p. 725 (1876); *Semp.*, Mus. Godf. Lep. xiv. p. 11 (1878).

Mackay to  
Cape York.

VAN. ARSINOE, *Bois.* (*nec Cram.*), Voy. Astr. Lep. p. 123, n. 7 (1832); *Ober.* (*C. Arsinoe*), Ann. Mus. Gen. xii. p. 458, n. 30 (1878).

### Genus 3, MESSARAS, *Doubl.*

Gen. D. L. p. 163 (1846-50).

CUPHA, *Billberg*, Enum. Ins. p. 79 (1820); *Scudd.*, Proc. Am. Acad. Art and Sc. x. p. 149 (1875); *Moore*, Lep. Cey. p. 64 (1881); *Dist.*, Rhop. Malay. p. 176 (1882-6).

1. **M. Prosope**, *Fab.* (*Pap. P.*), Syst. Ent. p. 504, n. 260 (1775); *Sp. Ins.* p. 91, n. 400 (1781); *Don.*, Ins. N. H. t. 27, f. 2 (1805); *Butl.*, B. M. Cat. Fab. Lep. p. 114, n. 2 (1869); *Kirb.*, Cat. D. L. p. 151 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 12 (1878).

Brisbane to  
Cape York.

### Genus 4, ATELLA, *Doubl.*

Gen. D. L. p. 165 (1846-50); *Moore*, Lep. Cey. p. 61 (1880-1); *Dist.*, Rhop. Malay. p. 173 (1882-6).

PHALANTA, *Horsf.*, Desc. Cat. Lep. E. I. C. t. 7, f. 5 (1829).

1. **A. Propinqua**, *Misk.*, Trans. Ent. Soc. p. 94 (1884).

Cardwell,  
Cairns.

Genus 5, *ARGYNNIS*, *Fab.*

Ill. Mag. vi. p. 283 (1807); *Latr.*, Enc. Meth. ix. p. 10 (1819);  
*Doubl.*, Gen. D. L. p. 171 (1846-50).

ARGYNNIS, BRENTHIS, ACIDALIA, and ARGYRONOME, *Hubn.*, Verz.  
bek. Schmett. pp. 30-32 (1816).

ARGYNNIS and BRENTHIS, *Feld.*, Neues. Lep. pp. 9, 10 (1861).

ACIDALIA, *Moore*, Lep. Cey. p. 60 (1880-1).

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| 1. <b>A. Inconstans</b> , <i>Butl.</i> , Cist. Ent. i. p. 164<br>(1873); <i>Kirb.</i> , Cat. D. L. Supp. p. 727<br>(1877). | Hunter R.,<br>N.S.W.;<br>Nerang R.,<br>Brisbane. |
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Genus 6, *PYRAMEIS*, *Hubn.*

(VANESSA and PYRAMEIS), Verz. bek. Schmett. pp. 32, 33 (1816).

PYRAMEIS, *Doubl.*, Gen. D. L. p. 202 (1846-50); *Moore*, Lep. Cey.  
p. 49 (1880-1).

AMMIRALIS, *Rennie*, Consp. p. 10 (1832).

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| 1. <b>P. Itea</b> , <i>Fab.</i> ( <i>Pap. I.</i> ), Syst. Ent. p. 498, n. 238<br>(1775); <i>Sp. Ins.</i> p. 82, n. 362 (1781);<br><i>Mant. Ins.</i> p. 45, n. 438 (1787); <i>Ent.</i><br><i>Syst. iii.</i> p. 103, n. 318 (1793); <i>Don.</i><br>( <i>Pap. I.</i> ), <i>Ins. N. H.</i> t. 26, f. 1 (1805);<br><i>Godt.</i> ( <i>Van. I.</i> ), Enc. Meth. ix. p. 321,<br>n. 57 (1819); <i>Hubn.</i> ( <i>Bassaris, I.</i> ),<br><i>Samml. Ex.</i> Schmett. (1816-24); <i>Bois.</i><br>( <i>Van. I.</i> ), <i>Voy. Astr. Lep.</i> p. 121, n. 5<br>(1832); <i>Butl.</i> , B. M. Cat. Fab. Lep.<br>p. 75, n. 5 (1869); <i>Kirb.</i> , Cat. D. L.<br>p. 185 (1871); <i>Semp.</i> , Mus. Godf. Lep.<br>xiv. p. 12 (1878); <i>Tep.</i> , Trans. R. Soc.<br>S. Aust. iv. p. 27 (1882); <i>Math.</i> , Trans.<br>E. Soc. p. 145, t. 6, f. 10 (1888); <i>McCoy</i> ,<br><i>Prod. Zool. Vic.</i> Dec. xx. p. 361, t. 198,<br>f. 1-4 (1890). | S. Australia,<br>Tasmania,<br>Victoria,<br>N. S. Wales,<br>N. Zealand,<br>Norfolk Is.,<br>Brisbane to<br>Mackay. |
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| 2. <b>P. Kershawii</b> , <i>McCoy</i> ( <i>Cynthia, K.</i> ), Ann. N.<br>H. ser. 4, i. p. 76 (1868); <i>Prod. Zool.</i><br><i>Vic.</i> Dec. xx. p. 363, t. 198, f. 5-8<br>(1890). | Australian<br>Colonies,<br>N. Zealand. |
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V. CARDUI, *Bois.*, *Voy. Astr. Lep.* p. 119,  
n. 1 (1832); *Tep.*, Trans. R. Soc. S.  
Aust. iv. p. 28 (1882).

P. CARDUI, var. KERSHAWII, *Kirb.*, Cat.  
D. L. p. 185 (1871); *Butl.*, Lep. N. Z.  
p. 3 (1874); *Semp.*, Mus. Godf. Lep.  
xiv. p. 12 (1878).

var. SUFFUSA, *Oll.*, Proc. L. Soc. N.S.W.  
ser. 2, iii. p. 1250 (1888).

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| 3. <b>P. Lucasii</b> , <i>Misk.</i> , Proc. L. Soc. N.S.W. ser. 2,<br>iii. p. 1515 (1888). | Victoria. |
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Genus 7, *JUNONIA*. Hubn.

(*JUNONIA* and *ALCYONEIS*), Verz. bek. Schmett. pp. 34, 35 (1816).

*JUNONIA*, *Sec. I.*, *Westw.*, Gen. D. L. pp. 206, 288 (1846-50).

*JUNONIA*, *Feld.*, Neues. Lep. p. 13 (1861); *Moore*, Lep. Cey. p. 40 (1880-1); *Godm. and Salv.*, Biol. Cent. Am. Rhop. p. 219 (1882).

1. **J. Albicincta**, *Butl.*, Trans. E. Soc. p. 5 (1875); *Kirb.*, Cat. D. L. Supp. p. 734 (1877). Brisbane to  
Cape York.

*J. ORITHYA*, *Semp.* (*nec Lin.*), Mus. Godf. Lep. xiv. p. 13 (1878).

2. **J. Vellida**, *Fab.* (*Pap. V.*), Mant. Ins. p. 35, n. 366 (1787); Ent. Syst. iii. p. 91, n. 283 (1793); *Don.* (*Pap. V.*), Ins. N. H. t. 25, f. 3 (1805); *Bois.* (*Van. V.*), Voy. Astr. Lep. p. 120, n. 3 (1832); *Butl.*, Cat. B. M. Fab. Lep. p. 74, n. 8 (1869); *Kirb.*, Cat. D. L. p. 188 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 13 (1878); *Ob.*, Ann. Mus. Gen. xii. p. 459, n. 31 (1878); *Tep.*, Trans. R. Soc. S. Aust. iv. p. 28 (1882); *Math.*, Trans. E. Soc. p. 146, t. 6, f. 11 (1888). S. Australia,  
Tasmania,  
Victoria,  
N. S. Wales,  
Brisbane to  
Cardwell,  
Fiji.

*VAN. CALYBE*, *Godt.*, Enc. Meth. ix. p. 317, n. 49 (1819).

*CYNTH. HAMPSTEDIENSIS*, *Steph.*, Ill. Brit. Ent. Haust. i. p. 48, t. 5, f. 3, 4 (1827).

Genus 8, *PRECIS*, Hubn.

Verz. bek. Schmett. p. 33 (1816); *Feld.*, Neues. Lep. p. 13 (1861); *Moore*, Lep. Cey. p. 39 (1880-1); *Dist.*, Rhop. Malay. p. 89 (1882-6).

*JUNONIA*, *Sec. II.*, *Doubl.*, Gen. D. L. p. 209 (1846-50).

1. **P. Zelima**, *Fab.* (*Pap. Z.*), Syst. Ent. p. 492, n. 212 (1775); Sp. Ins. p. 72, n. 321 (1781); Mant. Ins. p. 36, n. 375 (1787); Ent. Syst. iii. p. 92, n. 287 (1793); *Don.* (*Pap. Z.*), Ins. N. H. t. 23, f. 2 (1805); *Godt.* (*Van. Z.*), Enc. Meth. ix. p. 316, n. 46 (1819); *Bois.* (*Van. Z.*), Voy. Astr. Lep. p. 119, n. 2 (1832); *Butl.* (*Jun. Z.*), B. M. Cat. Fab. Lep. p. 76, n. 16, t. 1, f. 6 (1869); *Kirb.*, Cat. D. L. p. 191 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 13 (1878). Nerang River  
to Cardwell.

Genus 9, *RHINOPALPA*, *Feld.*

Wien. Ent. Mon. iv. p. 399 (1860); Neues. Lep. p. 49 (1861); *Dist.*,  
Rhop. Malay. p. 97 (1882-6).

EURHINIA, *Feld.*, Reise Nov. Lep. p. 405 (1866).

SALAMIS, *Bois.*, Faun. Madag. p. 46 (1833).

1. **R. Sabina**, *Cram.* (*Pap. S.*), *Pap. Ex.* iv. t. 289, A.-D. (1782); *Godt.* (*Van. S.*), *Enc. Meth.* ix. p. 299, n. 9 (1819); *Butl.* (*Sal. S.*), *B. M. Cat. Fab. Lep.* p. 82 (1869); *Kirb.*, *Cat. D. L.* p. 192 (1871); *Semp.*, *Mus. Godf. Lep.* xiv. p. 14 (1878); *Semp.* (*Sal. S.*), *Reisen. Philipp.* ii. v. t. A. f. 7 (1888). Cape York,  
Java,  
Amboina,  
Manilla.
- P. SABINUS, *Fab.*, *Sp. Ins.* p. 502 (1782); *Mant. Ins.* p. 10, n. 82 (1787); *Ent. Syst.* iii. p. 68, n. 211 (1793).
- VAN. AMELIA, *Guer.*, *Voy. Coq.* p. 273, t. 14, f. 1 (1829-32).
- R. PARVA, *Butl.*, *Ann. N. H.* ser 4, xviii. p. 123 (1876).

Genus 10, *DOLESCHALLIA*, *Feld.*

Neues. Lep. p. 14 (1861); *Moore*, *Lep. Cey.* p. 38 (1880-1); *Dist.*,  
Rhop. Malay. p. 87 (1882-6).

1. **D. Australis**, *Feld.*, Reise Nov. Lep. iii. p. 405, n. 609, t. 51, f. 1, 2 (1867); *Kirb.*, *Cat. D. L.* p. 193 (1871); *Semp.*, *Mus. Godf. Lep.* xiv. p. 14 (1878). Brisbane to  
C. York.

Genus 11, *DIADEMA*, *Boisd.*

Voy. Astr. Lep. p. 135 (1832); *Feld.*, Neues. Lep. p. 25 (1861);  
*Wall.*, *Trans. E. Soc.* p. 277 (1869).

DIADEMA, *Sec. 1*, and *Sec. 5*, EURALIA, *Westw.*, *Gen. D. L.* p. 279-281, (1850-52).

HYPOLIMNAS (*Hipolimnas*) ESOPTRIA, *Hubn.*, *Verz. bek. Schmett.* p. 45 (1816).

APATURA, *Moore*, *Lep. Cey.* p. 57 (1881).

1. **D. Bolina**, *Lin.* (*Pap. B.*) (*nec Drury*), *Syst. Nat.* i. p. 479, n. 124 (1758); *Mus. Ulr.* p. 295 (1764); *Syst. Ent.* i. 2, p. 781, n. 188 (1767); *Clerck.*, *Icones.* t. 21, f. 2 (1764); *Houtt.* (*Pap. B.*), *Natur. His.* i. 11, p. 331, n. 124 (1767); *Mull.* (*Pap. B.*), *Naturs.* v. 1, p. 614, n. 188 (1774); *Fab.* (*Pap. B.*), *Syst. Ent.* p. 507, n. 269 (1775); *Sp. Ins.* p. 98, n. 430 (1781); *Mant. Ins.* p. 50, n. 499 (1787); *Ent. Syst.* iii. p. 126, n. 384 (1793); *Gmel.* (*Pap. B.*), *Syst. Nat.* i. 5, p. 2323, n. 188 Brisbane to  
Cape York,  
Oceania,  
Papua,  
Malayana,  
India,  
Ceylon.



- (1790); *Thunb.* (*Pap. B.*), Mus. Nat. Ups. xxiii. p. 8 (1804); *Wall.*, Trans. E. Soc. p. 278, n. 1 (1869); *Butl.*, B. M. Cat. Fab. Lep. p. 96 (1869); *Butl.*, Ann. N. H. ser. 4, iii. p. 20, note (1869); *Kirb.* (*Hyp. B.*), Cat. D. L. p. 224 (1871); *l.c.* Supp. p. 738 (1877); *Butl.*, Proc. Z. Soc. p. 281-284 (1874); *Druce*, *l.c.* 105, n. 1 (1874); *Snell*, Tijd. Ent. xix. p. 148, n. 23 (1876); *l.c.* xx. p. 66 (1877); *Butl.*, Trans. L. Soc. Zool. ser. 2, i. p. 543, n. 1 (1877); *Semp.*, Mus. Godf. Lep. xiv. p. 14 (1878); *Moore* (*Ap. B.*), Lep. Cey. p. 58, t. 30, f. 1, 1b (1880-1); *Wood-Mas. and de Nic.* (*Hyp. B.*), Jour. As. Soc. Beng. xlix. 2, p. 228, n. 24 (1880); *Aurivill.* (*Hyp. B.*), Kongl. sv. vet. Ak. Handl. xix. p. 96, n. 5, (1882); *Dist.* (*Hyp. B.*), Rhop. Malay. p. 165, n. 1, t. 12, f. 10, 12 ♂; t. 15, f. 12 ♀ (1882-6); *de Nic.* (*Hyp. B.*), Butt. Ind. ii. p. 123 (1886); *Math.* (*Hyp. B.*), Trans. E. Soc. p. 149 (1888).
- ♂ PAP. AUGE, *Cram.*, Pap. Ex. ii. t. 190, A. B. (1779).
- D. AUGE, var. OTAHEITÆ, *Feld.*, Verh. Zool. Bot. Ges. xii. p. 492, n. 185 (1862).
- ♂ PAP. LASINASSA, *Cram.*, Pap. Ex. iii. t. 205, A. B. (1782); *Fab.* (*Pap. L.*), Ent. Syst. iii. p. 127, n. 386 (1793); *Godt.* (*Nymphalis*, *L.*), Enc. Meth. ix. p. 395, n. 155 (1819); *Bois.*, Voy. Astr. Lep. p. 135, n. 1 (1832); *Montr.*, Ann. Sc. Phys. Nat. Lyon. p. 406 (1856); *Butl.*, Trans. L. Soc. Zool. ser. 2, i. p. 533, 543 (1877).
- PAP. IPHIGENIA, *Cram.*, Pap. Ex. i., t. 67, D. E. (1779).
- PAP. ALCITHOE, *Cram.*, *l.c.* 80, A. B. (1779).
- NAJAS-MODERATA-ALCITHOE, *Hubn.*, Samml. Ex. Schmett. (1806-16).
- ♀ PAP. PERIMALE, *Cram.*, Pap. Ex. i. t. 65, C. D.; t. 67, B. (1779).
- ♀ PAP. MELITA, *Cram.*, *l.c.* 28, D. E. (1779).
- ♀ PAP. ALCMENE, *Cram.*, *l.c.* 67, A. (1779).
- ♀ PAP. ANTIGONE, *Cram.*, *l.c.* 17, C. (1779).
- ♀ PAP. PROSERPINA, *Cram.*, *l.c.* iii. t. 218, C. D. (1782).
- ♀ PAP. MANILIA, *Cram.*, *l.c.* 255, A. B. (1782).
- ♀ PAP. ERIPHILE, *Cram.*, *l.c.* iv. t. 376, A. B. (1782).

- ♂ PAP. LIRIA, *Fab.*, Ent. Syst. iii. p. 126, n. 385 (1793); *Godt. (Nymph. L.)*, Enc. Meth. ix. p. 395, n. 196 (1819).
- ♀ PAP. NERINA, *Fab.*, Syst. Ent. p. 509, n. 277 (1775); *Sp. Ins.* p. 102, n. 450 (1781); *Mant. Ins.* p. 53, n. 524 (1787); Ent. Syst. iii. p. 133, n. 410 (1793); *Don.*, Ins. N. H. t. 27, f. 1 (1805).
- ♀ PAP. JACINTHA, *Drury*, Ill. Ex. Ent. ii. t. 21, f. 1, 2 (1773); *Fab.*, Ent. Syst. iii. p. 60, n. 187 (1793); *Don.*, Ins. China, t. 33, f. 1 (1798); *Moore*, Lep. Cey. p. 58, t. 30, f. 1a ♀ (1880-1).
- ♀ PAP. AVIA, *Fab.*, Ent. Syst. iii. p. 111, n. 342 (1793).
- ♀ PAP. PANOPE, *Fab.*, *l.c.* 59, n. 186 (1793).
- PAP. ANTIOPA, *Müll.*, Natursystem i. p. 609 t. 19, f. 5 (1774).
- PAP. THECLA, *Turton*, Syst. Nat. iii. 2, p. 106, (1806).
- PAP. CRAMERIANUS, *Shaw*, Nat. Misc. xx. t. 852 (18—).
- D. CONSTANS, *Butl.*, Trans. E. Soc. p. 6 (1875).
- HYP. CHARYBDIS, *Butl.*, Cist. Ent. ii. p. 432 (1883); *de Nic.*, Butt. Ind. ii. p. 125 (1886).

2. D. Misippus, *Lin. (Pap. M.)*, Mus. Ulr. p. 264 (1764); Syst. Nat. i. 2, p. 767, n. 118 (1767); *Müll. (Pap. M.)*, Naturs. V. i. p. 597, n. 118 (1774); *Fab. (Pap. M.)*, *Sp. Ins.* p. 95, n. 414 (1781); *Butl.*, B. M. Cat. Fab. Lep. p. 97 (1869); *Kirb. (Hyp. M.)*, Cat. D. L. p. 225 (1871); *Mab.*, Bull. Soc. Zool. de Fr. p. 275 (1876); *Snell*, Tijd. Ent. xix. p. 149, n. 25 (1876); *l.c.* xx. p. 66 (1877); *Moore (Ap. M.)*, Lep. Cey. p. 59, t. 29, f. 1b (1880-1); *Wood-Mas. and de Nic. (Hyp. M.)*, Jour. A. Soc. Beng. i. p. 233, n. 21, t. 11 (1881); *Auriv. (Hyp. M.)*, Kongl. sv. vet. Akad. Handl. xix. p. 71, n. 5 (1882); *Dist. (Hyp. M.)*, Rhop. Malay. p. 167, t. 12, f. 9, 11 ♂; t. 15, f. 11 ♀ (1882-6); *de Nic. (Hyp. M.)*, Butt. Ind. ii. p. 126, 320, f. 85 (1886).
- PAP. BOLINA, *Drury (nec Lin.)*, Ill. Ex. Ent. i. t. 14, f. 1, 2 (1773); *Cram.*, Pap. Ex. i. t. 65, E. F. (1779); *Godt.*, Enc. Meth. ix. p. 396, n. 157, t. 34, f. 4 (1819);

Cardwell,  
Pt. Darwin,  
Malayana,  
China,  
India,  
Ceylon,  
Africa.

- Bois.* (*Dia. B.*), Faun. de Madag. p. 39, n. 1 (1833); *Lucas*, Sagra. Hist. de Cuba, p. 569 (1853); *Trim.*, Rhop. Afr. Aust. p. 153, n. 91 (1862).
- PAP. DIOCIPPUS, *Cram.*, Pap. Ex. i. t. 28, B. C. (1775); *Fab.*, Ent. Syst. iii. p. 51, n. 158 (1793).
- ♀ PAP. INARIA, *Cram.*, Pap. Ex. iii. t. 214, A. B. (1782).
- PAP. CHRYSIPPUS, *Sulz. (nec Lin.)*, Gesch. Ins. p. 114, t. 16, f. 3 (1776); *Gmel.*, Syst. Nat. i. 5, p. 2279, n. 119 (1790).
- EUPLEA DIOXIPPE, *Hubn.*, Verz. bek. Schmett. p. 15, n. 83 (1816).
- ♀ DANAIIS MISIPPE, *Godt.*, Enc. Meth. ix. p. 188, n. 40 (1819); (*Nymph. M.*), l.c. 394, n. 153, t. 33, f. 5 (1819).
3. D. Alimena, *Lin. (Pap. A.)*, Syst. Nat. i. p. 478, n. 121 (1758); *Mus. Ulr.* p. 291 (1764); *Syst. Nat. i.* p. 780, n. 178 (1767); *Olerck.*, Icones. t. 33, f. 1 (1764); *Fab. (Pap. A.)*, Syst. Ent. p. 509, n. 279 (1775); *Sp. Ins.* p. 98, n. 432 (1781); *Mant. Ins.* p. 53, n. 526 (1787); *Ent. Syst. iii.* p. 134, n. 412 (1793); *Cram. (Pap. A.)*, Pap. Ex. iii. t. 221 A.-C. (1782); *Godt. (Nym. A.)*, Enc. Meth. ix. p. 396, n. 158 (1819); *Bois.*, Voy. Astr. Lep. p. 136, n. 2 (1832); *Luc.*, Lep. Ex. t. 71, f. 1 (1835); *Butl.*, B. M. Cat. Fab. Lep. p. 97, n. 2 (1869); *Kirb. (Hyp. A.)*, Cat. D. L. p. 225 (1871); *l.c. Supp.* p. 739 (1877); *Semp.*, Mus. Godf. Lep. xiv. p. 15 (1878); *Ob.*, Ann. Mus. Gen. xii. p. 460, n. 37 (1878).
- PAP. CÆRULEOFASCIATUS, *Goeze*, Ent. Betyr. iii. 1, p. 222, n. 80 (1779).
- ♀ PAP. PORPHYRIA, *Cram.*, Pap. Ex. iii. t. 255, E. F. (1782).
- ♀ PAP. VELLEDA, *Cram.*, l.c. iv. t. 39, C. D. (1782).
- D. POLYMENA, *Feld.*, Reise Nov. Lep. iii. p. 414, n. 635, t. 55, f. 5, 6 (1867).

Port Curtis  
to C. York,  
Papua,  
Amboina.

Genus 12, NEPTIS, *Fab.*

- Ill. Mag. vi. p. 282 (1807); *Westw.*, Gen. D. L. p. 270 (1850-52); *Moore*, Proc. Z. Soc. p. 3 (1858); *Lep. Cey.* p. 54 (1880-1); *Feld.*, Neues. Lep. p. 30 (1861).

ACCA, *Hubn.*, Verz. bek. Schmett. p. 44 (1816).

PHILONOMA, *Billb.*, Enum. Ins. p. 78 (1820).

PHÆDYMA, *Feld.*, Neues. Lep. p. 31 (1861).

RAHINDA, *Moore*, Lep. Cey. p. 56 (1880-1).

1. **N. Shepherdii**, *Moore*, Proc. Z. Soc. n. 16, t. 50, f. 1 (1858); *Kirb.*, Cat. D. L. p. 241 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 16 (1878).

Brisbane to  
Cape York.

N. LATIFASCIATA, *Butl.*, Trans. E. Soc. p. 4 (1875); *Kirb.*, Cat. D. L. Supp. p. 742 (1877); *Semp.*, Mus. Godf. Lep. xiv. p. 16 (1878).

2. **N. Praslini**, *Bois.* (*Limenitis*, P.), Voy. Astr. Lep. p. 131, n. 2 (1832); *Kirb.*, Cat. D. L. p. 242 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 16 (1878).

Cardwell to  
Cape York.  
New Guinea,  
New Ireland.

ATHYMA LACTARIA, *Butl.*, Ann. N. H. ser. 3, xvii. p. 98, n. 1 (1866); *Kirb.*, Cat. D. L. p. 245 (1871).

3. **N. Venilia**, *Lin.* (*Pap. V.*), Syst. Ent. i. p. 478, n. 120 (1758); Mus. Ulr. p. 290 (1764); Syst. Ent. i. 2, p. 780, n. 177 (1767); *Clerck.*, Icones. t. 32, f. 4 (1764); *Fab.* (*Pap. V.*), Syst. Ent. p. 509, n. 278 (1775); Sp. Ins. p. 98, n. 431 (1781); Mant. Ins. p. 53, n. 525 (1787); Ent. Syst. iii. p. 134, n. 511 (1793); *Cram.* (*Pap. V.*), Pap. Ex. iii. t. 219, B. C. (1782); *Godt.* (*Nymph. V.*), Enc. Meth. ix. p. 433, n. 263, t. 38, f. 4 (1819); *Bois.* (*Limen. V.*), Voy. Astr. Lep. p. 133, n. 4 (1832); *Butl.* (*Ath. V.*), B. M. Cat. Fab. Lep. p. 61 (1869); *Kirb.* (*Ath. V.*), Cat. D. L. p. 245 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 15 (1878); *Ob.*, Ann. Mus. Gen. xii. p. 460, n. 39 (1878).

Cape York,  
Java,  
Amboina.

HAMADRYAS MOOREI, *Macleay*, W., Proc. E. Soc. N.S.W. i. p. 53, n. 10 (1866).

N. MORTIFACIES, *Butl.*, Trans. E. Soc. p. 5 (1875); *Kirb.*, Cat. D. L. Supp. p. 743 (1877).

4. **N. Consimilis**, *Bois.* (*Limen. C.*), Voy. Astr. Lep. p. 133, n. 5 (1832); *Kirb.*, Cat. D. L. p. 242 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 15 (1878); *Ob.*, Ann. Mus. Gen. xii. p. 462, n. 41 (1878).

Mackay to  
Cape York?

DAMIAS SCOTTII, *Macleay*, W., Proc. Ent. Soc. N.S.W. i. p. 54, n. 21 (1866).



Genus 13, *CHARAXES*, Ochs.

Schmett. Eur. iv. p. 18 (1816); *Feld.*, Neues. Lep. p. 39 (1861);  
*Butl.*, Proc. Z. Soc. p. 623 (1865); *Moore*, Lep. Cey. p. 28  
 (1881).

ERIBÆA, *Hüb.*, Verz. bek. Schmett. p. 46 (1816).

EULEPIS, *Billb.*, Enum. Ins. p. 80 (1820); *Moore*, Lep. Cey. p. 29  
 (1881).

NYPHALIS, *Westw.* (*nec Latr.*), Gen. D. L. p. 306 (1850-2).

HARIDRA, *Moore*, Lep. Cey. p. 30 (1881).

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| 1. <b>C. Sempronius</b> , <i>Fab.</i> ( <i>Pap. S.</i> ), Ent. Syst. iii.<br>1, p. 62, n. 194 (1793); <i>Butl.</i> , B. M.<br>Cat. Fab. Lep. p. 51 (1869); <i>Kirb.</i> , Cat.<br>D. L. p. 271 (1871); <i>Semp.</i> , Mus. Godf.<br>Lep. xiv. p. 16 (1878). | Sydney to<br>Mackay. |
| JASIA AUSTRALIS, <i>Swain.</i> , Zool. Ill. Ins. ii.<br>t. 114 (1833).  |                      |
| C. TYRTÆUS, <i>Feld.</i> , Wein. Ent. Mon. iii.<br>p. 399, n. 42, t. 9, f. 3 (1859).  |                      |

Genus 14, *MYNES*, Bois.

Voy. Astr. Lep. p. 129 (1832); *Westw.*, Gen. D. L. p. 267 (1850-2);  
*Wall.*, Trans. E. Soc. p. 77 (1869).

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| 1. <b>M. Geoffroyi</b> , <i>Guer.</i> ( <i>Nymph. G.</i> ), Voy. Coq.<br>t. 16, f. 1 (1829); <i>Bois.</i> , Voy. Astr.<br>Lep. p. 130 (1832); <i>Blanch.</i> , Voy. Pole,<br>Sud. p. 392, t. 2, f. 11, 12 (1853); <i>Wall.</i> ,<br>Trans. E. Soc. p. 78, n. 1 (1869); <i>Kirb.</i> ,<br>Cat. D. L. p. 274 (1871). | Brisbane to<br>Cape York,<br>Papua. |
| M. GUERINI, <i>Wall.</i> , Trans. E. Soc. p. 78,<br>n. 2 (1869); <i>Misk.</i> , l.c. 237-240 (1874);<br><i>Semp.</i> , Mus. Godf. Lep. xiv. p. 17, t. 9,<br>f. 10-17 (1878).   |                                     |

Family III., *ERYCINIDÆ*, *Swain.*

Phil. Mag. ser. 2, i. p. 187 (1827); *Westw.*, Gen. D. L. p. 415  
 (1850-2); *Bates*, Jour. Ent. i. p. 220 (1861); l.c. ii. p. 176  
 (1864); *Dist.*, Rhop. Malay. p. 185 (1882-6).

LEMONIIDÆ, *Kirb.*, Cat. D. L. p. 282 (1871); *Moore*, Lep. Cey. p. 67  
 (1881); *de Nic.*, Butt. Ind. i. p. 18 (1882).

ERYCININA, *Snell*, Lep. v. Mid.-Sum. p. 20 (1880).

Sub-Family I., *LIBYTHÆINÆ*, *Bates.*

Jour. Ent. ii. p. 176 (1864); *Moore*, Lep. Cey. i. p. 67 (1881);  
*de Nic.*, Butt. Ind. i. p. 18 (1882); *Dist.*, Rhop. Malay. p. 448  
 (1882-6).

LIBYTHEIDÆ, *Westw.*, Gen. D. L. p. 412 (1850-2); *Godm. and Salv.*,  
 Biol. Cent. Amer. Rhop. i. p. 359 (1884).

Genus 1, *LIBYTHEA*, *Fab.*

Ill. Mag. vi. p. 284 (1807); *Latr.*, Enc. Meth. ix. p. 10 (1819); *Westw.*, Gen. D. L. p. 412 (1850-2); *Moore*, Lep. Cey. p. 67 (1881); *Godm. and Salv.*, Biol. Cent. Amer. Rhop. i. p. 359 (1884); *Dist.*, Rhop. Malay. p. 448 (1882-6).

HECAERGE, *Ochs.*, Schmett. Eur. iv. p. 32 (1816); *Hubn.*, Verz. bek. Schmett. p. 100 (1816).

CHILEA, *Billb.*, Enum. Ins. p. 79 (1820).

1. **L. Myrrha**, *Godt.*, Enc. Meth. ix. p. 171, n. 4 (1819); *Hubn.* (*Hec. M.*), Zutr. Ex. Schmett. f. 789, 790 (1832); *Bois.*, Sp. Gen. i. t. 10, f. 8 (1836); *Gray*, Lep. Ins. Nep. t. 12, f. 4 (1846); *Horsf. and Moore*, Cat. Lep. Mus. E. I. C. i. p. 240, n. 518 (1857); *Wall.*, Trans. E. Soc. p. 335, n. 1 (1869); *Kirb.*, Cat. D. L. p. 282 (1871); *Druce*, Proc. Z. Soc. p. 347, n. 1 (1873); *Moore*, *l.c.* p. 832 (1878); *l.c.* 243 (1882); *Dist.*, Rhop. Malay. p. 448 (1882-6); *de Nic.*, Butt. Ind. ii. p. 302 (1886).

Cape York,  
Malayana,  
Burmah,  
India,  
Ceylon.

Family IV., *LYCÆNIDÆ*, *Stephens.*

Ill. Brit. Ent. Haust. i. p. 74 (1827); *Westw.*, Intro. Mod. Class. Ins. ii. p. 358 (1840); Gen. D. L. p. 468 (1850-2); *Bates*, Jour. Ent. i. p. 220 (1861); *l.c.* ii. p. 177 (1864); *Trim.*, Rhop. Afr. Austr. p. 217 (1866); *Moore*, Lep. Cey. i. p. 69 (1881); *de Nic.*, Butt. Ind. i. p. 18 (1882); *Dist.*, Rhop. Malay. p. 193 (1882-6); *de Nic.*, Butt. Ind. iii. p. 1 (1890).

POLYOMMATIDÆ, *Swain.*, Phil. Mag. ser. 2, i. p. 187 (1827).

Genus 1, *LUCIA*, *Swain.*

Zool. Ill. Ins. ii. p. 135 (1833); *Westw.*, Gen. D. L. p. 501 (1850-2). SPALGIS, *Moore*, Proc. Z. Soc. p. 137 (1879); Lep. Cey. p. 70 (1880-1).

1. **L. Lucanus**, *Fab.* (*Hesp. L.*), Ent. Syst. iii. 1, p. 322, n. 221 (1793); *Don.* (*Pap. L.*), Ins. Ind. t. 43, f. 4 (1800); *Butl.* (*Zeritis, L.*), B. M. Cat. Fab. Lep. p. 178, n. 5 (1869); *Kirb.*, Cat. D. L. p. 337 (1871); *Misk.*, Proc. L. Soc. N.S.W. ser. 2, v. p. 30 (1890).
- L. LIMBARIA, *Swain.* (*nec Blanchard*), Zool. Ill. Ins. ii. t. 135 (1833).
- CHRYSOPHANUS DISCIFER, *Herr.-Schff.*, Stett. Ent. Zeit. p. 72, n. 21, t. 4, f. 21 (1869); Ex. Schmett. ii. f. 123 (1869); *Kirb.* (*Lycæna, D.*), Cat. D. L. p. 344 (1871);

S. Australia,  
Victoria,  
N. S. Wales,  
Brisbane to  
Mackay.

*Semp.* (Zer. D.), Mus. Godf. Lep. xiv. p. 18 (1878); *Tep.* (Lyc. D.), Trans. R. Soc. S.A. iv. p. 29, t. 11, f. 14, 15 (1882).

Genus 2, *CHRY SOPHANUS*, Hubn.

Verz. bek. Schmett. p. 72 (1816); *Westw.*, Gen. D. L. p. 497 (1850-2); *Trim.*, Rhop. Af. Aust. p. 258 (1862-6); South. Af. Butt. ii. p. 90 (1887).

LYCÆNA, *Sec.* 3 (*part*), *Fab.*, Ill. Mag. vi. p. 285, n. 32 (1807).

CUPIDO, *Sec.* A., *Schr.*, Faun. Boica. ii. i. p. 153, 206 (1801).

POLYOMMATUS (*part*), *Latr.*, Hist. Nat. Crust. et Ins. xiv. p. 116 (1805); *Enc. Meth.* ix. p. 11 (1819); *Bois. and Lec.*, Lep. Am. Sep. p. 122 (1833); *Bois.*, Gen. et. Ind. Meth. p. 9 (1840); *Lang*, Butt. Eur. p. 86 (1884).

HEODES (*part*), *Dalm.*, Kong. Vet. Acad. Hand. xxxvii. p. 69, 91 (1816).

1. **C. Aurifer**, *Blanch.* (*Thecla*, A.), Voy. Pole Sud. t. 3, f. 13, 14 (1853); *Chenu.* (*Thecla*, A.), Enc. d'Hist. Nat. Pap. p. 280, f. 489 (1869); *Kirb.* (*Lucia*, A.), Cat. D. L. p. 337 (1871); *Butl.* (*Lyc.* A.), Trans. E. Soc. p. 10 (1875); *Semp.*, Mus. Godf. Lep. xiv. p. 18 (1878); *Misk.*, Proc. L. Soc. N.S.W. ser. 2, v. p. 31 (1890).

S. Australia,  
Tasmania,  
Victoria,  
N. S. Wales.

THECLA LIMBARIA, *Blanch.*, Voy. Pole Sud. texte. p. 400 (1853).

LUCIA PYRODISCUS, *Rosen.*, Ann. N. H. (5), xvi. p. 377 (1885); *Newm.* ♂ M.S. in Brit. Museum.

2. **C. Ænea**, *Misk.*, Proc. L. Soc. N.S.W. ser. 2, v. p. 33 (1890).

Brisbane to  
Bowen.

Genus 3, *ZERITIS*, Bois.

Sp. Gen. i. t. 22, f. 6 (1836); *Westw.*, Gen. D. L. p. 500 (1850-2).

ZERYTHIS, *Blanch.*, Hist. Nat. Ins. iii. p. 463 (1840).

AXIOCERCES, *Hubn.*, Verz. bek. Schmett. p. 71, 73, 111 (1816).

1. **Z. Thyra**, *Lin.* (*Pap. T.*), Mus. Ulr. p. 329 (1764); *Syst. Nat.* i. 2, p. 789, n. 227 (1767); *D. H. and W.*, Gen. D. L. t. 76, f. 9 (1850-2); *Trim.*, Rhop. Afr. Austr. ii. p. 273, n. 170 (1866); *Kirb.*, Cat. D. L. p. 338 (1871); *Misk.*, Proc. L. Soc. N.S.W. ser. 2, iii. p. 1520 (1888).

N. S. Wales.

Genus 4, *DANIS*, *Fab.*

Ill. Mag. vi. p. 286 (1807); *Westw.*, Gen. D. L. p. 497 (1850-2).

1. **D. Sebæ**, *Bois.* (*Damis*, *S.*), *Voy. Astr. Lep.* Cardwell to  
p. 68, n. 3 (1832); *D. H. and W.*, Gen. Cape York,  
D. L. t. 77, f. 4 ♀ (1850-2); *Blanch.*, Papua,  
*Voy. Pole Sud.* p. 394, t. 3, f. 1, 2 Moluccæ.  
(1853).

PAP. *DANIS*, *Cram.*, *Pap. Ex. i. t.* 70, E. F.  
(1779); *Godt. (Erycina, D.)*, *Enc. Meth.*  
ix. p. 577, n. 66 (1819); *Kirb. (Cupido,*  
*D.)*, *Cat. D. L.* p. 346 (1871); *Semp.*  
(*Danis, D.*), *Mus. Godf. Lep. xiv. p.* 18  
(1878).

PAP. *DAMIS*, *Herbst.*, *Naturs. Schmett.* xi.  
t. 321, f. 10, 11 (1804).

2. **D. Serapis**, n. sp.

♂ Light silvery blue; central patch of white; black margins abruptly defined.

UPPERSIDE.—*Primaries*: Costa narrowly margined; outer border wider, regular, its inner edge quite straight; central white patch nearly triangular, wide on hinder margin reaching to and bordering median vein to just beyond end of cell. *Secondaries*: Base narrowly blue; a broad transverse band of pure white from border to border widest at costa; a wide band of blue; outer border margined with black, widest towards anal angle, the inside edge being dentated.

UNDERSIDE.—*Primaries*: Costa and outer margin broadly black, within which, from base to apex, continued towards but not quite reaching hinder angle, is a band of metallic green; rest of wing pure white. *Secondaries*: Base black, within which is a band of metallic green; a broad transverse band of pure white from border to border, widest at costa; a narrow band of black, followed by a wide band of metallic green, within which is a row of black oblong spots between the nervules; a sub-marginal narrow black band.

♀ UPPERSIDE.—*Primaries*: Costal and outer borders extremely widely margined with black, nearly filling the cell; base suffused with metallic blue; rest of wing white. *Secondaries*: Slight suffusion of blue at base; a transverse moderately wide white band; the whole of the rest of wing black, the black area being more or less suffused with metallic blue from its inner edge.

UNDERSIDE as in ♂. Fringe of both wings in both sexes white, intersected with black at termination of nervules.

Thorax and abdomen, above blue, beneath white.

Ex.: ♂, 38 mm.; ♀, 40 mm.

Hab.: Cardwell, Cairns. Coll.: Miskin.

This species is very close to *D. Sebæ*, and, indeed, on the underside there is but little difference except in the more brilliant tint and greater development of the metallic green parts, and the greater length of the internervule black spots. On the upper side, however, the distinction is better defined, in the ♂ by the difference of colour and the much larger and more sharply expressed area of white in both wings, and the broad blue band in secondaries in this species.

The ♀ *Serapis* is distinguished by the blue area at base of both wings, and absence of black basal band of secondaries. The species is, moreover, consistently a smaller one; from observations of numerous examples from the localities named, I find no perceptible variation. Specimens from Cape York and New Guinea of *D. Sebæ* I have found to be tolerably stable in their appearance.

3. **D. Syrius**, *Misk.*, *Proc. L. Soc. N.S.W. ser. 2,* | Cape York.  
v. p. 34 (1890).



4. **D. Taygetus**, *Feld. (Lycæna, T.)*, Reise Nov. Sydney,  
Lep. ii. p. 266, n. 321, t. 33, f. 19-21 Brisbane to  
(1865); *Kirb. (Cupido, T.)*, Cat. D. L. Cape York.  
p. 347 (1871); *Semp.*, Mus. Godf. Lep.  
xiv. p. 19 (1878).  
D. SALAMANDRI, *Macleay, W.*, Proc. E. Soc.  
N.S.W. p. 54, n. 19 (1866).
5. **D. Cyanea**, *Cram. (Pap. C.)*, Pap. Ex. i. t. 76, Mackay to  
C. D. (1779); *Godt. (Poly. C.)*, Enc. Cooktown,  
Meth. ix. p. 642, n. 94, t. 42, f. 1 (1819); Papua.  
*Butl.*, B. M. Cat. Fab. Lep. p. 162, n. 2  
(1869); *Kirb. (Cupido, C.)*, Cat. D. L.  
p. 347 (1871); *Semp.*, Mus. Godf. Lep.  
xiv. p. 19 (1878).  
PAP. CYANUS, *Fab.*, Sp. Ins. p. 116, n. 515  
(1781); *Mant. Ins.* p. 67, n. 636 (1787);  
*Ent. Syst.* iii. p. 272, n. 50 (1793).  
DAMIS EPICORITUS, *Bois.*, Voy. Astr. Lep.  
p. 67 (1832).  
D. ALBASTOLA, *Lucas, T. P.*, Proc. R. Soc.  
Qd. p. 156, f. 3, 4 (1889).
6. **D. Coelestis**, n. sp.

♂ Brilliant light shining blue; central area white; narrow black margins.

UPPERSIDE.—*Primaries*: Costal margin very narrow; apex wider; outer margin decreasing to hinder angle, all the black margins very distinct; white central patch triangular in shape, very wide on hinder margin, extending upwards to and along median vein to end of cell, very sharply defined. *Secondaries*: With the base blue; outer area broadly blue; intermediate space pure white; outer border narrowly and distinctly margined with black.

UNDERSIDE.—*Primaries*: The whole of base, the costa broadly, outer border moderately margined with jet black; a sub-marginal outer row of white points, within the black; rest of wing white; an almost obsolete outer marginal fine white irregular line. *Secondaries*: Base, and a very wide outer marginal band, the inner edge of which describes a slightly concave line from apical angle to some distance up abdominal margin, jet black; central portion from border to border but very much wider on costa, pure white; a submarginal row of triangular white spots, from anal angle to apical, and above this a parallel row of metallic green, smaller lunular marks, both within the black band; a very indistinct outer marginal broken white line; median first branch prolonged into a short tail, black tipped with white.

♀ UPSIDE.—*Primaries*: Base extending to end of cell, not quite touching costa, broadly light metallic blue; costa narrowly to end of cell, then very broadly to apex, black; outer border broadly black; rest of wing white. *Secondaries*: Outer border broadly black; from abdominal margin above the black border broadly, but narrowing to a point when it reaches inner edge of black band at apex, light shining blue; rest of wing white.

UNDERSIDE.—As in ♂.

Thorax and abdomen in both sexes above metallic blue; beneath, white.  
Ex.: ♂ 30-35 mm.; ♀ 22-32 mm. Hab.: Cairns. Coll.: Queensland Museum.

This exquisite little species was recently captured by the Museum collector (Mr. J. C. Wilde), at Cairns. It is intermediate between *Taygetus* (Feld.) and *Aleuas* (Feld.), the blue being paler and more brilliant than in the former, but not nearly so light as in the latter; the underside differs most completely from both.

7. **D. Aleuas**, *Feld.* (*Lyc. A.*), Reise Nov. Lep. ii. p. 268, n. 325, t. 33, f. 15, 16, ♂ (1865); *Kirb.* (*Cupido, A.*), Cat. D. L. p. 347 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 19 (1878).  
 ♀ **LYC. ALCAS**, *Feld.*, Reise Nov. Lep. ii. p. 268, n. 326, t. 33, f. 27, 28 ♀ (1865).
- \*8. **D. Macleayi**, *Semp.*, Mus. Godf. Lep. xiv. p. 19 (1878).
- \*9. **D. Arinia**, *Ob.* (*Cupido, A.*), Ann. Mus. Gen. xii. p. 465 (1878); Bois. M.S.
- Cardwell,  
Cooktown,  
Mysol,  
Waigiou.
- C. York.
- Queensland,  
Aru.

Genus 5, *LAMPIDES*, *Hubn.*

Verz. bek. Schmett. p. 70 (1816); *Moore*, Lep. Cey. i. p. 94 (1881);  
*Dist.*, Rhop. Malay. p. 226 (1882-6); *de Nic.*, Butt. Ind. iii.  
 p. 159 (1890).

1. **L. Pseudocassius**, *Murray*, Ent. Mo. Mag. x. p. 108, 126 (1873); *Kirb.* (*Plebeius, P.*), Cat. D. L. Supp. 772 (1877).  
**L. CASSIOIDES**, *Murray* (*nec Bois.*), Ent. Mo. Mag. x. p. 108 (1873).  
**L. HYRCANUS**, *Semp.* (*nec Feld.*), Mus. Godf. Lep. xiv. p. 21 (1878).
- \*2. **L. Berenice**, *Herr.-Schff.* (*Lyc. B.*), Stett. Ent. Zeit. p. 74, n. 33 (1869); *Kirb.* (*Pleb. B.*), Cat. D. L. p. 348 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 20 (1878).
- \*3. **L. Astraptēs**, *Feld.*, Sitzb. Ak. Wiss. Wien. Math. Nat. Cl. xl. p. 456, n. 31 (1860); *Kirb.* (*Pleb. A.*), Cat. D. L. p. 352 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 20 (1878).  
*var.* **L. ARGENTINA**, *Pritt.*, Stett. Ent. Zeit. p. 274, n. 32 (1867).  
**L. CANDRENA**, *Herr.-Schff.*, l.c. p. 74, n. 34 (1869).
4. **L. Perusia**, *Feld.* (*Lyc. P.*), Sitzb. Ak. Wiss. Wien. Math. Nat. Cl. xl. p. 458, n. 38 (1860); Reise Nov. Lep. ii. p. 274, n. 338, t. 24, f. 4 (1865); *Herr.-Schff.*, Stett. Ent. Zeit. p. 73, n. 27 (1869); *Kirb.*, Cat. D. L. p. 353 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 21 (1878).  
 ♀ **LYCÆNA NICONIA**, *Feld.*, Sitz. Ak. Wiss. Wien. Math. Nat. Cl. xl. p. 458, n. 39 (1860); *Kirb.* (*Pleb. N.*), Cat. D. L. p. 353 (1871).
- Brisbane to  
Bowen,  
Solomon  
Islands.
- Brisbane,  
R'khampn,  
Bowen.
- Bowen,  
C. York.
- Brisbane to  
Cape York,  
Amboina.

5. **L. Lineata**, *Murray* (*Lyc. L.*), Trans. E. Soc. p. 524, t. 10, f. 9 (1874); *Kirb.* (*Pleb. L.*), Cat. D. L. p. 771 (1877); *Misk.* (*Lyc. L.*), Proc. L. Soc. N.S.W. ser. 2, v. p. 35 (1890) ♂.
- LAM. PALMYRA, *Semp.* (*nec Feld.*), Mus. Godf. Lep. xiv. p. 35 (1890).
6. **L. Strabo**, *Fab.* (*Hesp. S.*), Ent. Syst. iii. 1, p. 287, n. 101 (1793); *Godt.* (*Poly. S.*), Enc. Meth. ix. p. 656, n. 134 (1819); *Bois.* (*Catochrysops, S.*), Voy. Astr. Lep. p. 88 (1832); *Butl.*, B. M. Cat. Fab. Lep. p. 165, n. 14 (1869); *Kirb.* (*Pleb. S.*), Cat. D. L. p. 351 (1871); *Druce* (*Cupido, S.*), Proc. Z. Soc. p. 106, n. 3 (1874); *Snell* (*Lyc. S.*), Tijd. Ent. xix. p. 152, n. 46 (1876); (*Cupido, S.*), l.c. xxi. p. 18, n. 82 (1878); *Butl.*, Proc. Z. Soc. p. 667, n. 80 (1880); *Wood-Mas. and de Nic.*, Jour. A. Soc. Beng. l. p. 234, n. 32 (1881); l.c. p. 248, n. 53 (1881); *Moore* (*Cat. S.*), Lep. Cey. p. 91, t. 37, f. 2, 2a (1881); *Dist.* (*Cato. S.*), Rhop. Malay. p. 224, t. 21, f. 8 ♂, 14 ♀ (1882-6); *de Nic.* (*Cato. S.*), Butt. Ind. iii. p. 177, n. 743 (1890).
- LYCÆNA KANDARPA, *Horsf.*, Cat. Lep. E. I. C. p. 82, n. 17 (1829); *Moore* (*Lyc. K.*), Proc. Z. Soc. p. 773 (1865); *Kirb.* (*Pleb. K.*), Cat. D. L. p. 352 (1871); *Semp.* (*Lamp. K.*), Mus. Godf. Lep. xiv. p. 158, n. 62 (1878).
- LYCÆNA ASOKA, *Koll.*, Hug. Kasch. iv. 2 p. 419, n. 3 (1848); *Kirb.* (*Pleb. A.*), Cat. D. L. p. 350 (1871).
- LYC. DIDDA, *Koll.*, Hug. Kasch. iv. 2, p. 420, n. 5 (1848); *Kirb.* (*Pleb. D.*), Cat. D. L. p. 350 (1871).
- LYC. PLATISSA, *Herr.-Schff.*, Stett. Ent. Zeit. xxx. p. 74, n. 31, t. 4, f. 20 (1869); *Ex.* Schmett. ii. f. 122, ♀ (1869); *Kirb.* (*Pleb. P.*), Cat. D. L. p. 356 (1871).
- LYC. CALEDONICA, *Feld.*, Verh. Zool. Bot. Ges. xii. p. 495, n. 209 (1862).
7. **L. Ancyra**, *Feld.* (*Lyc. A.*), Sitzb. Ak. Wiss. Wien. Math. Nat. Cl. xl. p. 457, n. 36 (1860); *Reise Nov. Lep.* ii. p. 276, n. 342, t. 34, f. 5 (1865); *Kirb.* (*Pleb. A.*) Cat. D. L. p. 352 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 21 (1878).

Brisbane to  
Mackay.

Brisbane to  
Cape York,  
N. Caledonia,  
N. Hebrides,  
Malayana,  
India,  
Ceylon.

Brisbane to  
Cooktown,  
Amboina.

8. **L. Scintillata**, *Lucas, T. P. (Lyc. S.)*, Proc. R. Soc. Qd. p. 157, f. 8, 9, 10 (1889). Brisbane,  
Mackay.
9. **L. Nora**, *Feld. (Lyc. N.)*, Sitzb. Ak. Wiss. Wien. Math. Nat. Cl. xl. p. 458, n. 37 (1860); *Reise Nov. Lep. ii. p. 275, n. 341, t. 34, f. 34 ♂ (1865)*; *Herr.-Schff. (Lyc. N.)*, Stett. Ent. Zeit. xxv. p. 72, n. 24 (1869); *Kirb. (Pleb. N.)*, Cat. D. L. p. 352 (1871); *Semp., Mus. Godf. Lep. xiv. p. 21 (1878)*; *de Nic. (Nacaduba, N.)*, Jour. A. Soc. B. lii. 2, p. 73, n. 11, t. 1, f. 14 ♀ (1883); *Butt. Ind. p. 147 (1890)*.
- LYC. FELDERI, *Murray*, Trans. E. Soc. p. 527, t. 10, f. 4, 6 (1874); *Kirb. (Pleb. F.)*, Cat. D. L. Supp. p. 770 (1877).
10. **L. Boeticus**, *Lin. (Pap. B.)*, Syst. Nat. 12 ed. i. 2, p. 789, n. 226 (1767); *Fab. (Pap. B.)* Syst. Ent. p. 522, n. 333 (1775); *Sp. Ins. ii. p. 119, n. 529 (1781)*; *Mant. Ins. ii. p. 69, n. 657 (1787)*; *Esp. (Pap. B.)*, Schmett. i. 1, t. 27, f. 3 a, b (1778); *l.c. 2, t. 91, f. 3 (1784)*; *Hub. (Pap. B.)*, Eur. Schmett. i. f. 373, 374 ♂, 375 ♀ (1798-1803); *Godt. (Poly. B.)*, Enc. Meth. ix. p. 653, n. 122 (1819); *Don. (Pap. B.)*, Nat. Rep. v. t. 148 (1827); *Butl., Cat. Fab. Lep. B. M. p. 163, n. 11 (1869)*; *Kirb. (Pleb. B.)*, Cat. D. L. p. 354 (1871); *Butl., Trans. L. Soc. Zool. ser. 2, i. p. 547, n. 6 (1877)*; *Mab. (Lyc. B.)*, Bull. Soc. Zool. Fr. p. 215 (1877); *Semp., Mus. Godf. Lep. xiv. p. 258, n. 63 (1878)*; *Snell (Lyc. B.)*, Tijds. voor. Ent. xix. p. 152, n. 45 (1876); *(Cupido, B.)*, *l.c. xx. p. 66 (1877)*; *l.c. xxi. p. 23, n. 90 (1878)*; *Auriv. (Cupido, B.)*, Ofv. Vet. Ak. Forh. xxxvi. p. 44, n. 12 (1879); *Wollas. (Cupido, B.)*, Ann. N. H. ser. 5, iii. p. 223 (1879); *Moore (Polyom. B.)*, Lep. Cey. p. 93 (1880-1); *Butl. (Polyom. B.)*, Trans. E. Soc. p. 31, n. 1 (1882); *Tep. (Cup. B.)*, Trans. R. Soc. S. Aust. iv. p. 29, t. 2, f. 11 (1882); *Dist. (Polyom. B.)*, Rhop. Malay. p. 214, f. 64; p. 230, n. 1, t. 20, f. 8 ♂, 1 ♀ (1882-6); *Oll. and Forde (Lyc. B., Lyc. Leguminis, in plate)*, Scott's Aust. Lep. ii. p. 10, t. 12 (1890); *de Nic. (Polyom. B.)*, Butt. Ind. p. 204, t. 27, f. 190 ♂ (1890). S. Australia,  
Victoria,  
N.S. Wales,  
Brisbane to  
Mackay,  
Oceania,  
Papua,  
Malayana,  
Asia,  
Africa,  
Europe.



HESPERIA BÆTICA, *Fab.*, Ent. Syst. iii. 1 p. 280, n. 77 (1793); *Horsf.* (*Lyc. B.*), Cat. Lep. E. I. C. p. 80, n. 14 (1828); *Bois.* (*Lyc. B.*), Sp. Gen. i. t. 7, f. 9 ♂ (1836); *Mill.* (*Lyc. B.*), Ann. Soc. Lin. Lyons, p. 229, t. 4, f. 1-6 (1861); *Guén.* (*Lyc. B.*), Ann. Soc. Ent. Fr. ser. 4, vii. p. 665, t. 13, f. 9-12 (1867); *Lang* (*Lyc. B.*), Butt. Eur. p. 99, n. 1, t. 22, f. 2, t. 28, f. 5 (1884); *Walk.* (*Lamp. B.*), Ent. v. p. 52, n. 2 (1870); *Newman* (*Lamp. B.*), Brit. Butt. p. 117, f. 39 (1874); *Trim.* (*Lyc. B.*), Rhop. Afr. Aust. ii. p. 236, n. 138, p. 342 (1866); *Elwes* (*Lyc. B.*), Proc. Z. Soc. p. 887; (1881); *Trim.* (*Lyc. B.*), South Af. Butt. ii. p. 58, n. 147 (1887); *Pryer* (*Lyc. B.*), Rhop. Nihonica, p. 17, n. 50, t. 4, f. 22 ♂ (1888).

PAP. COLUTHEÆ, *Fuess.*, Schweiz. Ins. p. 31, n. 594, f. 2 (1775).

PAP. DAMOËTES, *Fab.*, Syst. Ent. p. 526, n. 350 (1775); Sp. Ins. ii. p. 124, n. 558 (1781); Mant. Ins. ii. p. 77, n. 707 (1787); (*Hesperia, D.*), Ent. Syst. iii. 1, p. 303, n. 148 (1793); *Don.* (*Pap. D.*), Ins. N. H. t. 31, f. 2 (1805); *Godt.* (*Polyom. D.*), Enc. Meth. ix. p. 660, n. 198 (1819); *Horsf.* (*Lyc. D.*), Cat. Lep. E. I. C. p. 81, n. 16 (1829); *Bois.* (*Lyc. D.*), Voy. Astr. Lep. p. 85, n. 16 (1832); *Butl.* (*Lamp. D.*), B. M. Cat. Fab. Lep. p. 165, n. 11 (1869); *Kirb.* (*Pleb. D.*), Cat. D. L. p. 355 (1871).

PAP. DAMÆTAS, *Esp.*, Gesch. Eur. Schmett. t. 28, f. 1a, 1b, t. 29, f. 1a, 1b (1806-18).

PAP. PISORUM, *Fourc.*, Ent. Paris ii. p. 242, n. 25 (1785).

PAP. ARCHIAS, *Cram.*, Pap. Ex. ii. t. 181, f. C. (1777); *Herr.-Schff.* (*Lyc. A. ?*), Stett. Ent. Zeit. xxx. p. 73, n. 28 (1869).

11. **L. Miskini**, *Lucas, T. P.* (*Lyc. M.*), Proc. R. Soc. Qd. p. 158, f. 5, 6, 7 (1889).

Brisbane to  
Cairns.

12. **L. Bochus**, *Cram.* (*Pap. B.*), Pap. Ex. iv. p. 210, t. 391, C. D. ♂ (1782); *Hubn.* (*Jamides, B.*), Verz. bek. Schmett. p. 71, n. 702 (1816); *Godt.* (*Polyom. B.*), Enc. Meth. ix. p. 661, n. 150 (1819); *Kirb.* (*Pleb. B.*), Cat. D. L. p. 357 (1871); *Moore* (*Jam. B.*), Lep. Cey. p. 86, t. 36,

Brisbane to  
Pt. Douglas,  
N. Hebrides  
Malayana,  
India,  
Ceylon.

f. 8, 8a (1880-1); *Dist. (Jam. B. var.)*, Rhop. Malay. p. 222, n. 1, t. 21, f. 16, 19 (1882-6); *Staud. (Lyc. B.)*, Ex. Schmett. p. 272, t. 94 ♂ (*Lyc. Plato, in plate*) (1888); *de Nic. (Jam. B.)*, Butt. Ind. iii. p. 157, n. 733, t. 27, f. 186 ♂ (1890).

HESPERIA PLATO, *Fab. (nec Blanch.)*, Ent. Syst. iii. 1, p. 288, n. 103 (1793); *Don. (Pap. P.)* Ins. Ind. t. 45, f. 2 (1800); *Godt. (Polyom. P.)*, Enc. Meth. ix. p. 655, n. 127 (1819); *Butl. (Lamp. P.)*, B. M. Cat. Fab. Lep. p. 166, t. 2, f. 3 (1869); *Kirb. (Pleb. P.)*, Cat. D. L. p. 352 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 20 (1878).

LYCÆNA PLUTO, *Westw.*, Gen. D. L. ii. p. 490, n. 42 (1850-2).

HESPERIA DEMOCRITUS, *Fab.*, Ent. Syst. iii. 1, p. 285, n. 94 (1793); *Godt. (Polyom. D.)*, Enc. Meth. ix. p. 656, n. 132 (1819); *Butl. (Lamp. D.)*, B. M. Cat. Fab. Lep. p. 166, n. 10 (1869); *Kirb. (Pleb. D.)*, Cat. D. L. p. 352 (1871); *Butl. (Lamp. D.)*, Proc. Z. Soc. p. 667, n. 13 (1880).

LYCÆNA NILA, *Horsf.*, Cat. Lep. E. I. C. p. 78, n. 14 (1828).

LAM. NICOBARICUS, *Wood-Mas. and de Nic.*, Jour. A. Soc. Beng. i. 2, p. 234, n. 34 (1881).

LYC. ORANIGRA, *Lucas, T. P.*, Proc. R. Soc. Qd. vi. p. 118, t. 6, f. 3, 4, 5 (1889).

13. **L. Pavana**, *Horsf. (Lyc. P.)*, Cat. Lep. E. I. C. p. 77, n. 12 (1828); *Kirb. (Pleb. P.)*, Cat. D. L. p. 353 (1871); *Wood-Mas. and de Nic. (Nacaduba, P.)*, Jour. A. Soc. B. iv. 2, p. 367, n. 124 (1886); *de Nic. (Nac. P.)*, Butt. Ind. iii. p. 145 (1890).

Brisbane,  
Bowen,  
Java, India.

NAC. MACROPHTHALMA, *Moore (nec Feld.)*, Jour. L. Soc. Zool. xxi. p. 40 (1886).

- \*14. **L. Dion**, *Godt. (Polyom. D.)*, Enc. Meth. ix. p. 679, n. 191 (1819); *Bois. (Polyom. D.)*, Voy. Astr. Lep. p. 83, n. 12 (1832); *Kirb. (Pleb. D.)*, Cat. D. L. p. 357 (1871).

Australasia.

15. **L. Cnejus**, *Fab. (Hesperia, C.)*, Ent. Syst. Supp. p. 430, n. 100-1 (1798); *Godt. (Polyom. C.)*, Enc. Meth. ix. p. 657, n. 135 (1829); *Horsf. (Lyc. C.)*, Cat.

Brisbane to  
Bowen,  
Oceania,  
Malayana,

Lep. E. I. C. p. 83, n. 18 (1829); *Moore* (*Lyc. C.*), Proc. Z. Soc. p. 773 (1865); *Herr.-Schff.* (*Lyc. C.*), Stett. Ent. Zeit. t. 4, f. 18 (1869); *Ex. Schmett.* ii. f. 120 (1869); *Butl.*, Cat. Fab. Lep. B. M. p. 165, n. 13 (1869); *Kirb.* (*Pleb. C.*), Cat. D. L. p. 353 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 158, n. 61 (1878); *Druce* (*Cupido, C.*), Proc. Z. Soc. p. 348, n. 7 (1873); *Moore* (*Catochrysops, C.*), Lep. Cey. i. p. 92 (1880-1); *Butl.* (*Cato. C.*), Proc. Z. Soc. p. 605, n. 15 (1881); *Moore* (*Cato. C.*), *l.c.* p. 246 (1882); *Dist.* (*Cato. C.*), Rhop. Malay. p. 225, n. 2, t. 21, f. 2 ♂, p. 456, n. 2, t. 44, f. 15 ♀ (1882-6); *de Nic.* (*Cato. C.*), Butt. Ind. iii. p. 178, n. 745 (1890).

China,  
India,  
Ceylon.

CATO. CNEIUS, *Doh.*, Jour. A. Soc. B. lv. 2, p. 133, n. 170 (1886).

LYC. PANDIA, *Koll.*, Hug. Kasch. iv. 2, p. 418, n. 2 (1848); *Kirb.* (*Pleb. P.*), Cat. D. L. p. 350 (1871).

LYC. PATALA, *Koll.*, *l.c.* p. 419, n. 4 (1848); *Kirb.* (*Pleb. P.*), Cat. D. L. p. 350 (1871); *Butl.* (*Lamp. P.*), Trans. L. Soc. Zool. ser. 2, i. p. 547, n. 1 (1877); (*Cato. P.*), Proc. Z. Soc. p. 148, n. 14 (1883); *Swin.* (*Cat. P.*), *l.c.* p. 131, n. 53 (1885); *l.c.* p. 426, n. 38 (1886).

LYC. SAMOA, *Herr.-Schff.*, Stett. Ent. Zeit. xxx. p. 73, 138, n. 30 (1869).

16. L. **Argiades**, *Pall.* (*nec Fab.*) (*Pap. A.*), Reise i. App. p. 472, n. 65 (1771); *Kirb.* (*Pleb. A.*), Cat. D. L. p. 356 (1871); *Elwes* (*Lyc. A.*), Proc. Z. Soc. p. 887 (1881); *Lang* (*Lyc. A.*), Butt. Eur. p. 101, n. 4, t. 22, f. 5 (1884); *Leech* (*Lyc. A.*), Proc. Z. Soc. p. 415, n. 54 (1887); *Pryer* (*Lyc. A.*), Rhop. Nihon. p. 17, n. 51, t. 4, f. 23, A. B. (1888); *de Nic.*, Butt. Ind. iii. p. 137, n. 716, t. 26, f. 180 ♂ (1890).

Brisbane to  
Mackay,  
Malayana,  
Asia,  
Europe,  
N. America.

PAP. AMYNTAS, *Fab.*, Syst. Ent. p. 533, n. 384 (1775); Mant. Ins. ii. p. 70, n. 666 (1787); Wien. Verz. p. 185, n. 18 (1776); *Hubn.*, Eur. Schmett. i. t. 65, f. 322-324 (1798-1803); *Fab.* (*Hesp. A.*), Ent. Syst. iii. 1, p. 285, n. 95 (1793); *Godt.* (*Polyom. A.*), Enc. Meth. ix.

- p. 659, n. 146 (1819); *Butl. (Lamp. A.)*, B. M. Cat. Fab. Lep. p. 164, n. 10 (1869).
- PAP. TIRESIAS, *Rott.*, Naturf. vi. p. 23, n. 10 (1775); *Esp.*, Schmett. i. 1, t. 34, f. 1, 2, t. 49, f. 2 (1779); *Hubn.*, Eur. Schmett. i. f. 319-321 (1798-1803).
- PAP. POLYSPERCHON, *Berg.*, Nomencl. ii. p. 72, t. 44, f. 3-5 (1779); *Ochs.*, Schmett. Eur. i. 2, p. 61 (1808).
- HESP. PARRHASIUS, *Fab.*, Ent. Syst. iii. 1, p. 389, n. 108 (1793); *Don.*, Ins. Ind. t. 45, f. 5 ♂ (1800); *Godt. (Polyom. P.)*, Enc. Meth. ix. p. 657, n. 136 (1819); *Horsf. (Lyc. P.)*, Cat. Lep. E. I. C. p. 86, n. 20 (1829); *Westw. (Lyc. P.)*, Gen. D. L. p. 489, n. 13 (1850-2); *Horsf. and Moore (Lyc. P.)*, Cat. Lep. Mus. E. I. C. i. p. 22, n. 11, t. 1a, f. 3 ♂ (1857); *Butl. (Lamp. P.)*, B. M. Cat. Fab. Lep. p. 165, n. 12 (1869); *Kirb. (Pleb. P.)*, Cat. D. L. p. 353 (1871); *Semp. (Lamp. P.)*, Mus. Godf. Lep. xiv. p. 155, n. 53 (1878); *Snell (Cup. P.)*, Tijd. voor. Ent. xxi. p. 19, n. 85 (1878); *Moore (Everes. P.)*, Lep. Cey. p. 85, t. 36, f. 7 (1880-1); *Dist. (Everes. P.)*, Rhop. Malay. p. 221, n. 1, f. 66 ♂ (1882-6).
- PAP. GLANDON, *de Prun.*, Lep. Ped. (1798).
- CUPIDO PUER, *Schr.*, Faun. Boic. ii. 1, p. 215, n. 1374 ♂ (1801).
- PAP. ALCETAS, *Hubn.*, Eur. Schmett. i. p. 51 (1805).
- PAP. CORETAS, *Ochs.*, Schmett. Eur. i. 2, p. 60 (1808); *Meig. (Polyom. C.)*, Eur. Schmett. ii. p. 14, n. 18, t. 44, f. 5 a, b (1830).
- POLYOM. COMYNTAS, *Godt.*, Enc. Meth. ix. p. 660, n. 147 (1823); *Bois. and Lec. (Argus, C.)*, Lep. Am. Sept. p. 120, t. 36, f. 6, 7, 8, 9 (1833); *Kirb. (Pleb. C.)*, Cat. D. L. p. 356 (1871); *Scud. (Everes. C.)*, Butt. East. U. St. p. 911, t. 6, f. 9, 10 (1889).
- POLYOM. LACTURNUS, *Godt.*, Enc. Meth. ix. p. 660, n. 148 (1819); *Bois. (Lyc. L.)*, Voy. Astr. Lep. p. 77, n. 2 (1832); *Kirb. (Pleb. L.)*, Cat. D. L. p. 356 (1871).



- LYC. AMYNTULA, *Bois.*, Ann. Soc. E. Fr. p. 294 (1852).  
 LYC. HELLOTIA, *Mén.*, Cat. Lep. Mus. Petr. ii. p. 84, 124, n. 1395, t. 10, f. 6 ♀ (1857); *Butl. (Everes. H.)*, Ann. N. H. ser. 5, ix. p. 17, n. 17 (1882).  
 LYC. PRAXITELES, *Feld.*, Verh. Zool Bot. Ges. Wien. xii. p. 489, n. 151 (1862); *Reise Nov. Lep.* ii. p. 281, n. 355, t. 35, f. 5 ♂ (1865).  
 LYC. DIPORA, *Moore*, Proc. Z. Soc. p. 506, n. 108, t. 31, f. 8 ♂ (1865); *Doherty (Everes. D.)*, Jour. A. Soc. B. lv. 2, p. 132, n. 158 (1886).  
 \*17. **L. Dubiosa**, *Semp.*, Mus. Godf. Lep. xiv. p. 159 (1878). Cooktown, Cape York.

Genus 6, LYCÆNESTHES, *Moore*.

Proc. Zool. Soc. 773 (1865); *Hew.*, Trans. E. Soc. p. 343 (1874); *Moore*, Lep. Cey. p. 87 (1880-1); *Dist.*, Rhop. Malay. p. 232 (1884); *Trim.*, South. Af. Butt. ii. p. 93 (1887).

- \*1. **L. Emolus**, *Godt. (Polyom. E.)*, Enc. Meth. ix. p. 656, n. 133 (1819); *Kirb. (Pleb. E.)*, Cat. D. L. p. 347 (1871); *Decken's Reisen. (nec Gerstaecker, nec Trim.) (Lyc. E.)*, iii. 2, p. 373, n. 26, t. 15, f. 4 (1873); *de Nic.*, Butt. Ind. iii. p. 128 (1890). Bowen, C. York, Malayana, India.  
 LAMPIDES BALLISTON, *Hubn.*, Zutr. Ex. Schmett. ff. 229, 230 ♂ (1803); *Kirb. (Pleb. B.)*, Cat. D. L. p. 351 (1871); *Semp. (Lycænesthes, B.)*, Mus. Godf. Lep. xiv. p. 165, n. 87 (1878).  
 DIPSAS LYCÆNOIDES, *Feld.*, Sitzb. Ak. Wiss. Wien. Math. Nat. Cl. xl. p. 454, n. 21 (1860); (*Pseudodipsas, L.*), *Reise Nov. Lep.* ii. p. 258, n. 305, t. 30, f. 25 ♂ (1865); *Kirb. (Pseudodipsas, L.)*, Cat. D. L. p. 408 (1871); *Hew. (Lycænesthes, L. ?)*, Ill. D. Lep. p. 219, n. 1, t. 92, f. 39 ♀ (1878).  
 LYC. BENGALENSIS, *Moore*, Proc. Z. Soc. p. 773, t. 41, f. 9 ♂ (1865); *Kirb. (Pseudodipsas, B.)*, Cat. D. L. p. 408 (1871); *Dist.*, Rhop. Malay. p. 458, n. 2, t. 44, f. 9 ♂ (1886).  
 2. **L. Godeffroyi**, *Semp.*, Mus. Godf. Lep. xiv. p. 165 (1878). Bowen, Cooktown.

3. **L. Phaseli**, *Math. (Lampides, P.)*, Trans. E. Soc. p. 311 (1889). Mackay to Cape York.
4. **L. Turneri**, *Misk.*, Proc. L. Soc. N.S.W. ser. 2, v. p. 39 (1890). Mackay to Cape York.
5. **L. Tasmanicus**, *Misk.*, Proc. L. Soc. N.S.W. ser. 2, v. p. 40 (1890). Tasmania? Cairns.
- The type of this species was given to me as coming from Tasmania. I have since seen a specimen that I know was captured at Cairns, and I am inclined to think that the former habitat is an error.
- \*6. **L. Hypoleuca**, *Prittiv. (nec Koll.)*, Stett. Ent. Zeit. p. 273 (1867). Australia.
- PLEBEIUS AMAZARA, *Kirb.*, Cat. D. L. p. 376 (1871).

Genus 7, *LYCÆNA*, *Fab.*

- Sec. 3 (part)*, Ill. Mag. vi. p. 285, n. 32 (1807); (*part*) *Bois.*, Gen. et Ind. Meth. p. 10 (1840); *Herr.-Schff.*, Syst. Bearb. Schmett. Eur. i. p. 111 (1843); (*part*) *Westw.*, Gen. D. L. ii. p. 488 (1850-2); (*part*) *Trim.*, Rhop. Afr. Aust. p. 233 (1862-6); South. Af. Butt. ii. p. 11 (1887); *de Nic.*, Butt. Ind. iii. p. 66 (1890).
- LYCÆIDES, *Hubn.*, Verz. bek. Schmett. p. 69 (1816).
- PLEBEII, *Lin.*, Syst. Nat. i. 2, p. 774 (1767); *Cuvier*, Tabl. Elem. p. 591 (1799).
- PLEBEIUS, *Kirb.*, Cat. D. L. p. 653 (1871).
- CUPIDO, *Sec. B.*, *Schrank*, Faun. Boic. ii. 1, pp. 153, 209 (1801); *Kirb.*, Cat. D. L. p. 345 (1871).
- POLYOMMATUS (*part*) *Latr.*, Hist. Nat. Crust. Ins. xiv. p. 116 (1805); Enc. Meth. ix. p. 11 (1819).
- RUSTICUS, *Hubn.*, Tentamen. p. 1 (1806).
- SCOLITANTIDES, *Hubn.*, Verz. bek. Schmett. p. 68 (1816); *Butl.*, B. M. Cat. Fab. Lep. p. 167 (1869).
- ARGUS, *Bois. and Lec.*, Lep. Am. Sept. p. 113 (1833).
1. **L. Lulu**, *Math.*, Trans. E. Soc. p. 312 (1889). Brisbane to Cooktown, Fiji.
- L. CONJUNGENS, *Lucas, T. P.*, Proc. R. Soc. Qd. p. 160, f. 11, 12 (1889).
2. **L. Biocellata**, *Feld.*, Reise Nov. Lep. ii. p. 280, n. 352, t. 35, f. 14 (1865); *Kirb.* (*Pleb. B.*), Cat. D. L. p. 359 (1871); *Semp. (Lamp. B.)*, Mus. Godf. Lep. xiv. p. 23 (1878). S. Australia, Brisbane, R'khampt'n, N. Hebrides.
- CUPIDO ADAMAPUNCTA, *Tep.*, Trans. R. Soc. S.A. iv. p. 31, t. 2, f. 16 (1882).

3. **L. Trochilus**, *Frey*. (*Lyc. T.*), Neure. Beit. Schmett. v. p. 98, t. 440, f. 1 (1844); *Herr.-Schff.* (*Lyc. T.*), Schmett. Eur. i. p. 128, t. 48, f. 224, 225, ♂, t. 49, f. 226 ♀ (1844); *Wallen* (*Lyc. T.*), Lep. Caffr. ser. 2, ii. p. 41, n. 14 (1857); *Trim.* (*Lyc. T.*), Rhop. Afr. Aust. ii. p. 256, n. 157 (1866); *Kirb.* (*Polyom. T.*), Eur. Butt. p. 99 (1862); (*Pleb. T.*), Cat. D. L. p. 357 (1871); *Lang* (*Lyc. T.*), Butt. Eur. p. 103, n. 6, t. 22, f. 7 (1884); *Trim.* (*Lyc. T.*), South Afr. Butt. ii. p. 52, n. 144 (1887); *Butl.* (*Pleb. T.*), Proc. Z. Soc. p. 368, n. 50 (1886); (*Zizera, T.*), *l.c.* p. 484, n. 14 (1884); *Swin.* (*Ziz. T.*), Trans. E. Soc. p. 341, n. 25 (1885); Jour. Bomb. N. H. Soc. ii. p. 273, n. 26 (1887); *Elw.* (*Ziz. T.*), Trans. E. Soc. p. 379, n. 248 (1888); *de Nic.* (*Chilades, T.*), Butt. Ind. iii. p. 91, n. 673 (1890).
- LYC. PUTLI, *Koll.*, Hug. Kaschm. iv. 2, p. 422, n. 8 (1848); *Kirb.* (*Pleb. P.*), Cat. D. L. p. 362 (1871); *Semp.* (*Lyc. P.*), Mus. Godf. Lep. xiv. p. 24 (1878); *Moore* (*Chilades, P.*), Lep. Cey. p. 77, t. 35, f. 4, 4a (1880-1); Proc. Z. Soc. p. 245 (1882); *Swin.* (*Ch. P.*), *l.c.* p. 507, n. 27 (1884); *l.c.* p. 427, n. 50 (1886); *Butl.* (*Pleb. P.*), Proc. Z. Soc. p. 368, n. 51 (1886); Ann. N. H. ser. 5, xviii. p. 187, n. 30 (1886); *Doh.* (*Everes. P.*), Jour. A. Soc. B. lviii. 2 (1889).
- LYC. ISOPHTHALMA, *Herr.-Schff.*, Stett. Ent. Zeit. xxx. p. 73, n. 29 (1869); (*nec Correspondenzblatt Regensburg* xvi. p. 141 (1862)); *Kirb.* (*Pleb. I.*), Cat. D. L. p. 350 (1871).
- LYC. PARVA, *Murray*, Trans. E. Soc. p. 526, t. 10, f. 1 (1874).
- LYC. GNOMA, *Snell*, Tijd. voor. Ent. xix. p. 159, n. 48, t. 7, f. 1 (1876); *Kirb.* (*Pleb. G.*), Cat. D. L. Supp. p. 770 (1877).
4. **L. Gracilis**, *Misk.*, Proc. L. Soc. N.S.W. ser. 2, v. p. 37 (1890).
- L. EXILIS, *Lucas, T. P.* (*nec Bois.*), Proc. R. Soc. Qd. p. 159, f. 13-15 (1889).

Rockhampt'n  
to Bowen,  
Malayana,  
Asia,  
Europe,  
Africa.

Brisbane to  
Cooktown.

5. **L. Gaika**, *Trim. (Lyc. G.)*, Trans. E. Soc. ser. 3, i. p. 403 (1862); South Afr. Butt. ii. p. 50, n. 143 (1877); *Kirb. (Pleb. G.)*, Cat. D. L. p. 362 (1871); *Butl. (Zizera, G.)*, Proc. Z. Soc. p. 484, n. 16 (1884); *de Nic. (Ziz. G.)*, Butt. Ind. iii. p. 118, n. 702, t. 26, f. 174 ♀ (1890).
- LYC. LYSIMON, *Wallen. (nec Hubn.)*, Kong. Svens. vet. Akad. Handl. ser. 2, ii. Rhop. Caffr. p. 39, n. 8 (1857); *Trim. (Lyc. L.)*, Rhop. Afr. Aust. ii. p. 256, n. 158, t. 4, f. 7 ♂ (1866).
- LYC. PYGMÆA, *Snell*, Tijd. voor. Ent. xix. p. 163, n. 50, t. 7, f. 3 (1876); *Kirb. (Pleb. P.)*, Cat. D. L. Supp. p. 772 (1877); *Moore (Zizera, P.)*, Lep. Cey. i. p. 79, t. 35, f. 5, 5a ♂ (1881); Proc. Z. Soc. p. 245 (1882); *Butl. (Ziz. P.)*, l.c. 149, n. 17 (1883); *Swin. (Ziz. P.)*, l.c. 507, n. 26 (1884); l.c. 132, n. 60 (1885); l.c. 427, n. 46 (1886); *Moore (Z. P.)*, Jour. L. Soc. Zool. xxi. p. 39 (1886); *Doh. (Z. P.)*, Jour. A. Soc. B. iv. 2, p. 33, n. 175 (1886); *Dist. (Z. P.)*, Rhop. Malay. p. 454, n. 3, f. 126 ♂ (1882-6); *Elwes (Z. P.)*, Trans. E. Soc. p. 380, n. 249 (1888).
- L. ATTENUATA, *Lucas, T. P.*, Proc. L. Soc. N.S.W. ser. 2, iv. p. 1066 (1889).
6. **L. Mackayensis**, *Misk.*, Proc. L. Soc. N.S.W. ser. 2, v. p. 35 (1890).
7. **L. Lysimon**, *Hubn. (Pap. L.)*, Eur. Schmett. i. t. 105, f. 534, 535, ♂ (1798-1803); *Ochs. (Pap. L.)*, Schmett. Eur. i. 2, p. 24 (1808); *Godd. (Polyom. L.)*, Enc. Meth. ix. p. 701, n. 240 (1819); *Herr.-Schff. (Lyc. L.)*, Schmett. Eur. i. p. 118, t. 5, f. 28, 29 (1843); *Westw. (Lyc. L.)*, Gen. D. L. ii. p. 492, n. 93 (1850-2); *Staud. (Lyc. L.)*, Hor. Soc. Ent. Ross. xiv. p. 239 (1878); *Kirb. (Pleb. L.)*, Cat. D. L. p. 361 (1871); *Semp. (Lamp. L.)*, Mus. Godf. Lep. xiv. p. 25 (1878); *Elwes (Lyc. L.)*, Proc. Z. Soc. p. 888 (1881); *Lang (Lyc. L.)*, Butt. Eur. p. 111, n. 16, t. 24, f. 3 (1884); *Trim. (Lyc. L.)*, South. Afr. Butt. p. 45, n. 140 (1887); *Kheil (Pleb. L.)*, Rhop. Ins. Nias. p. 30, n. 93 (1884); *de Nic.*

Brisbane to  
Cairns,  
New  
Hebrides,  
Malayana,  
India,  
Ceylon,  
Africa.

Mackay.

R'khampton,  
Cooktown,  
Asia,  
Europe,  
Africa.



- (*Ziz. L.*), Butt. Ind. iii. p. 116, n. 699, t. 26, f. 173 ♀ (1890).
- LYC. PLATO, *Blanch. (nec Fab.)*, Voy. Pole Sud. p. 398, t. 3, f. 9, 10 (1853).
- LYC. GALBA, *Leder.*, Verh. Zool. Bot. Ges. Wien. v. p. 190, t. 1, f. 4 ♂ (1855).
- LYC. KNYSNA, *Trim.*, Trans. E. Soc. ser. 3, i. p. 282 (1862); Rhop. Afr. Aust. ii. p. 255, n. 156 (1866); *Butl. (Ziz. K.)*, Proc. Z. Soc. p. 484, n. 15 (1884).
- LYC. NOV.-HOLLANDIÆ, *Feld.*, Verh. Zool. Bot. Ges. xii. p. 490, n. 170 (1862).
- POLYOM. KARSANDRA, *Moore*, Proc. Z. Soc. p. 505, n. 106, t. 31, f. 7 ♀ (1865); *Wood-Mas. and de Nic. (Polyom. K.)*, Jour. A. Soc. B. i. 2, p. 235, n. 42 (1881); *Feld. (Lyc. K.)*, Ver. Zool. Bot. Ges. Wien. xviii. p. 282 (1868); *Kirb. (Pleb. K.)*, Cat. D. L. p. 371 (1871); *Butl. (Lyc. K.)*, Trans. L. Soc. Zool. ser. 2, i. p. 548, n. 3 (1877); *Moore (Ziz. K.)*, Lep. Cey. i. p. 78, t. 35, f. 6, 6a ♂ (1880-1); *Dist. (Lyc. K.)*, Rhop. Malay. p. 213, n. 2, t. 22, f. 22 ♂ (1882-6); *Swin. (Lyc. K.)*, Proc. Z. Soc. p. 506, n. 24 (1884); *l.c.* p. 132, n. 59 (1885); Trans. E. Soc. p. 341, n. 23 (1885); *Butl. (Lyc. K.)*, Proc. Z. Soc. p. 367, n. 47 (1886); *Swin. (Lyc. K.)*, *l.c.* p. 426, n. 44 (1886); *Doh. (Lyc. K.)*, Jour. A. Soc. B. lv. 2, p. 133, n. 178 (1886); *de Nic. (Ziz. K.)*, Butt. Ind. iii. p. 117, n. 700 (1890).
8. **L. Labradus**, *Godt. (Pol. L.)*, Enc. Meth. ix. p. 680, n. 197 (1819); *Bois. (Lyc. L.)*, Voy. Astr. Lep. p. 85, n. 15 (1832); *Kirb. (Pleb. L.)*, Cat. D. L. p. 373 (1871).
- LYC. COMMUNIS, *Herr.-Schff.*, Stett. Ent. Zeit. p. 72, n. 25 (1869); *Kirb. (Pleb. C.)*, Cat. D. L. p. 361 (1871).
- LYC. ALSULUS, *Herr.-Schff.*, Stett. Ent. Zeit. p. 75, n. 36 (1869); *Kirb. (Pleb. A.)*, Cat. D. L. p. 372 (1871); *Semp. (Lamp. A.)*, Mus. Godf. Lep. xiv. p. 24 (1878); *Olliffe and Forde (Lyc. A.)—Polyom. Fréguens in plate—Scott's Aust. Lep.* p. 10, t. 12 (1890).
- ♀ POLYOM. DIOGENES, *Blanch.*, Voy. Pole Sud. iv. Ins. p. 397, t. 3, f. 7, 8 (1853); *Kirb. (Pleb. D.)*, Cat. D. L. p. 349 (1871).
- S. Australia,  
Victoria,  
N. S. Wales,  
Brisbane to  
Mackay.

- LYC. PHŒBE, *Murray*, Ent. Mo. Mag. x. p. 107 (1873); Proc. E. Soc. p. 2 (1874); *Kirb. (Pleb. P.)*, Cat. D. L. Supp. p. 772 (1877).  
 CUPIDO DELICATA, *Tep.*, Trans. R. Soc. S.A. iv. p. 30, t. 2, f. 12 (1882).  
 LYC. PERVULGATUS, *Guest*, l.c. v. p. 36 (1882).  
 9. **L. Canescens**, *Misk.*, Proc. L. Soc. N.S.W. ser. 2, v. p. 35 (1890). Tasmania.  
 10. **L. Serpentata**, *Herr-Schff.*, Stett. Ent. Zeit. p. 74, n. 32 (1869); *Kirb. (Pleb. S.)*, Cat. D. L. p. 360 (1871); *Semp. (Lamp. S.)*, Mus. Godf. Lep. xiv. p. 23 (1878). S. Australia, Brisbane, R'khampton.  
 CUPIDO MOLYBDENA, *Guest*, Trans. R. Soc. S.A. iv. p. 36 (1882).  
 CUP. FASCIOLA, *Tep.*, l.c. p. 30, t. 2, f. 13 (1883).  
 11. **L. Sulpitius**, *Misk.*, Proc. L. Soc. N.S.W. ser. 2, v. p. 37 (1890). R'khampton.  
 12. **L. Mathewi**, *Misk.*, l.c. p. 38 (1890). Sydney.  
 13. **L. Hobartensis**, *Misk.*, l.c. (1890). Hobart.  
 14. **L. Agricola**, *D. H. and W. (Lucia, A.)*, Gen. D. L. ii. p. 496, n. 199, note, t. 76, f. 4 (1850-2); *Kirb. (Pleb. A.)*, Cat. D. L. p. 376 (1871); *Semp. (Lamp. A.)*, Mus. Godf. Lep. xiv. p. 23 (1878); *Tep. (Cup. A.)*, Proc. R. Soc. S.A. iv. p. 29, t. 2, f. 8 (1882). S. Australia, Tasmania, Victoria.  
 15. **L. Nigra**, *Misk.* ♀ Proc. L. Soc. N.S.W. ser. 2, v. p. 36 (1890). Cardwell.  
 16. **L. Tenella**, n. sp.

♀ White, with dark marginal bands and spots.

UPPERSIDE.—*Primaries*: Costal margin from base, and outer margin to hind border, widely dark bluish brown; fringe black. *Secondaries*: Outer margin with row of black spots ringed with white, and surrounded with light brown; marginal line of black; fringe white; base and abdominal margin lightly suffused with brown specks; spots of underside indistinctly apparent.

UNDERSIDE.—*Primaries*: Silvery white, with light brown markings, as follow:—Small oblong spot at upper angle of extremity of cell; a short transverse band near costa, about one-third from apex; a transverse row, from near costa to hind margin, of disconnected short bands, parallel with and not far from outer margin; apex somewhat suffused with brown; three triangular-shaped marginal spots from below apex downwards, between nervules. *Secondaries*: Silvery white, with roundish light brown spots, as follow:—Two between costal and subcostal nervures, about equidistant from base to apex; one within cell near base; one about middle of abdominal margin; a transverse crooked row of five from subcostal nervule to abdominal margin, commencing not far from outer margin; a sub-marginal row of black spots from apex to anal angle.

Thorax and abdomen, above black; beneath silvery grey.

Exp.: 23 mm. Hab.: Cairns. Coll.: Queensland Museum.

This species was recently captured by the Museum collector; the opposite sex is at present unknown. It is nearly allied to *Nigra* (*miki*).

- \*17. **L. Conformis**, *Butl.*, Proc. Z. Soc. p. 469 | Cape York.  
(1877).  
\*18. **L. Sylvicola**, *Leach*, M.S. Mus. Berol; *Semp.* | Sydney.  
(*Lamp. S.*), Mus. Godf. Lep. xiv. p. 23  
(1878.)

Genus 8, *HOLOCHILA*, *Feld.*

Verh. Zool. Bot. Ges. xii. (1862).

1. **H. Xanthospilos**, *Hubn.* (*Rusticus Adolescens*, X.), Samml. Ex. Schmett. (1806-16); *Kirb.* (*Pleb. X.*), Cat. D. L. p. 375 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 27 (1878).  
POLYOM. HUBNERI, *Godt.*, Enc. Meth. ix. p. 677, n. 185 (1819); *Bois.* (*Lyc. H.*), Voy. Astr. Lep. p. 80, n. 7 (1832).  
ERINA PULCHELLA, *Swain.*, Zool. Ill. Ins. ii. t. 134 (1832).  
LYC. BYZOS, *Bois.*, Voy. Astr. Lep. p. 81, n. 8 (1832).  
2. **H. Heathi**, *Cox* (*Lyc. H.*), Ent. iv. p. 402 (1873); *Kirb.* (*Pleb. H.*), Cat. D. L. Supp. p. 770 (1877); *Semp.*, Mus. Godf. Lep. xiv. p. 27 (1878); *Math.* (*Lyc. H.*), Trans. E. Soc. p. 151 (1888).  
LYC. PARADOXA, *Guest.*, Trans. R. Soc. S.A. v. p. 36 (1882).  
3. **H. Absimilis**, *Feld.*, Verh. Zool. Bot. Ges. xii. p. 490, n. 168 (1862); *Reise Nov. Lep.* ii. p. 261, n. 309, t. 32, f. 14-16 (1865); *Kirb.* (*Pleb. A.*), Cat. D. L. p. 375 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 25 (1878); *Oll. and Forde* (*Polycyma, A., in plate*), Scott's Aust. Lep. ii. p. 9, t. 12 (1890).  
4. **H. Androdus**, *Misk.*, Proc. L. Soc. N.S.W. ser. 2, v. p. 41 (1890).  
5. **H. Cyprotus**, *Oll.*, Proc. L. Soc. N.S.W. x. p. 716 (1886).  
6. **H. Uranites**, *Mey.* (*Polyommatus, U.*), Proc. L. Soc. N.S.W. ser. 2, ii. p. 827 (1887).  
7. **H. Cyanites**, *Mey.* (*Pol. C.*), *l.c.* 828 (1887).  
8. **H. Erinus**, *Fab.* (*Pap. E.*), Syst. Ent. p. 525, n. 348 (1775); *Sp. Ins.* p. 124, n. 555 (1781); *Mant. Ins.* p. 77, n. 704 (1787);
- Sydney to R'khamp't'n, Timor.  
S. Australia, Brisbane.  
Sydney to Mackay.  
Cape York, Cooktown.  
N. S. Wales, Brisbane, R'kh'mpt'n.  
W. Australia.  
W. Australia.  
S. Australia, Victoria, N. S. Wales,

Ent. Syst. iii. p. 302, n. 145 (1793); *Don.* (*Pap. E.*), *Ins. N. H.* t. 31, f. 3 (1805); *Godt. (Polyom. E.)*, *Enc. Meth.* ix. p. 680, n. 196 (1819); *Butl. (Lyc. E.)*, *B. M. Cat. Fab. Lep.* p. 167, n. 1 (1869); *Herr.-Schff. (Lyc. E.)*, *Stett. Ent. Zeit.* p. 75, n. 37, t. 4, f. 19 (1869); *Ex. Schmett.* ii. f. 121 (1869); *Kirb. (Pleb. E.)*, *Cat. D. L.* p. 375 (1871); *Semp.*, *Mus. Godf. Lep.* xiv. p. 26 (1878); *Olliffe and Forde (Chrysophanus, E.—Polycyma Carythæ, in plate)*, *Scott's Aust. Lep.* p. 9, t. 12 (1890).

Brisbane to  
Cape York.

H. ANITA, *Semp.*, *Mus. Godf. Lep.* xiv. p. 163 (1878).

♂ H. HYACINTHINA, *Semp.*, *l.c.* 162 (1878); *Scott M.S.*

LYC. BIMACULOSA, *Leach, M.S.*

CUPIDO SIMPLEX, *Tep.*, *Trans. R. Soc. S.A.* iv. p. 30, t. 2, f. 10 (1882).

LYC. MÆRENS, *Rosen.*, *Ann. N. H.* ser. 5, xvi. p. 377 (1885).

POLYOM. SUBPALLIDUS, *Lucas, T. P.*, *Proc. R. Soc. Qd.* vi. p. 117, t. 6, f. 1-2 (1889).

\*9. H. Helenita, *Semp.*, *Mus. Godf. Lep.* xiv. p. 162 (1878).

Cape York.

\*10. H. Margarita, *Semp.*, *l.c.* 161 (1878).

Cape York,  
Gayndah.

\*11. H. Acasta, *Cox (Lyc. A.)*, *Ent.* iv. p. 402 (1873); *Kirb. (Pleb. A.)*, *Cat. D. L. Supp.* p. 769 (1877).

S. Australia.

12. H. Albosericea, n. sp.

♂ UPPERSIDE.—Shining silky white; base of wings suffused slightly with blue grey; apical angle of primaries bordered very narrowly with black, widest at extreme angle.

♀ UPPERSIDE.—Bluish-white; blue more pronounced at basal areas; apical area from one-third of costa to centre of outer margin, thence narrowly to hinder angle, which is barely reached, black. Outer border of secondaries cloudy, darkest towards termination of nervules.

UNDERSIDE.—Uniform soft olive-brown, absolutely without markings. Thorax and abdomen, above black, beneath white.

Exp. : 33 mm.

Hab. : Expedition Range, inland from Rockhampton. Coll. : Miskin.

This very remarkable species was collected by Mr. George Barnard, to whose kindness I am indebted for the types of my description.

### Genus 9, HYPOCHRYSOPS, *Feld.*

(*Thec.*, *Sec. Hyp.*), *Wien. Ent. Mon.* iv. p. 243 (1860); (*Hyp.*), *Reise Nov. Lep.* ii. p. 251 (1865).

MILETUS (*part*), *Hubn. (nec Westw.)*, *Verz. bek. Schmett.* p. 71 (1816).



1. **H. Delicia**, *Hew.*, Ent. Mo. Mag. xii. p. 38 (1875); *Kirb.*, Cat. D. L. Supp. p. 773 (1877). Victoria, Brisbane.
2. **H. Ignita**, *Leach (Lyc. I.)*, Zool. Misc. i. p. 136, t. 60, f. 1-3 (1814); *Kirb. (Pleb. I.)*, Cat. D. L. p. 376 (1871); (*Hyp. I.*), *l.c.* Supp. p. 773 (1877); *Semp.*, Mus. Godf. Lep. xiv. p. 28 (1878). Brisbane.
3. **H. Olliffi**, *Misk.*, ♂ Proc. L. Soc. N.S.W. ser. 2, iii. p. 1518 (1888). W. Australia, N. S. Wales.
4. **H. Narcissus**, *Fab. (Pap. N.)*, Syst. Ent. p. 524, n. 342 (1775); Sp. Ins. p. 122, n. 544 (1781); Mant. Ins. p. 71, n. 675 (1787); Ent. Syst. iii. p. 290, n. 110 (1793); *Don. (Pap. N.)*, Ins. N. H. t. 30, f. 3 (1805); *Bois. (Lyc. N.)*, Voy. Astr. Lep. p. 79, n. 5 (1832); *Butl. (Miletus, N.)*, B. M. Cat. Fab. Lep. p. 159, n. 1 (1869); *Kirb.*, Cat. D. L. p. 378 (1871). Brisbane.
5. **H. Epicurus**, *Misk.*, Trans. E. Soc. p. 455 (1876); *Kirb.*, Cat. D. L. Supp. p. 773 (1877). Brisbane.
6. **H. Apelles**, *Fab. (Pap. A.)*, Syst. Ent. p. 524, n. 343 (1775); Sp. Ins. p. 122, n. 546 (1781); Mant. Ins. p. 71, n. 676 (1787); Ent. Syst. iii. p. 290, n. 111 (1793); *Don. (Pap. A.)*, Ins. N. H. t. 30, f. 2 (1805); *Bois. (Lyc. A.)*, Voy. Astr. Lep. p. 79, n. 6 (1832); *Butl. (Miletus, A.)*, B. M. Cat. Fab. Lep. p. 159, n. 4 (1869); *Kirb.*, Cat. D. L. p. 378 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 28 (1878); *Staud.*, Ex. Schmett. t. 94 (1888). R'ckhampton to Cape York.
7. **H. Hecalius**, *Misk.*, ♀ Trans. E. Soc. p. 94 (1884); ♂ Proc. L. Soc. N.S.W. ser. 2, iii. p. 1516 (1888). Victoria.
8. **H. Euclides**, *Misk.*, *l.c.* 1517 (1888). Victoria.
9. **H. Epicletus**, *Feld. (Thec. E.)*, Wien. Ent. Mon. iii. p. 324, n. 25, t. 6, f. 3 (1859); *Kirb.*, Cat. D. L. p. 378 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 27 (1878). R'ckhampton to Cooktown, Aru.
10. **H. Eucletus**, *Feld.*, Reise Nov. Lep. ii. p. 253, n. 299 (1865); *Kirb.*, Cat. D. L. p. 378 (1871). Cooktown, Cape York, Gilolo.
- \*11. **H. Halyætus**, *Hew.*, Trans. E. Soc. p. 350 (1874); *Kirb.*, Cat. D. L. Supp. p. 773 (1877). W. Australia.

Genus 10, *PSEUDODIPSAS*, *Feld.**(Thec., Sec. Pseud.)*, Wien. Ent. Mon. iv. p. 243, n. 89 (1860).

1. **P. Digglesi**, *Hew.*, Trans. E. Soc. p. 344 (1874); *Kirb.*, Cat. D. L. Supp. p. 783 (1877); *Semp.*, Mus. Godf. Lep. xiv. p. 28 (1878). | Brisbane, Cape York.
2. **P. Ilias**, *Feld. (Thecla, I.)*, Sitzb. Ak. Wiss. Wien. Math. Nat. Cl. xl. p. 454, n. 22 (1860); *Kirb. (Pleb. I.)*, Cat. D. L. p. 376 (1871). | Brisbane to Cairns, Amboina.
- P. INNOTATUS*, *Misk.*, Ent. Mo. Mag. p. 165 (1874); *Kirb.*, Cat. D. L. Supp. p. 783 (1877).
3. **P. Brisbanensis**, *Misk.*, Trans. E. Soc. p. 95 (1884). | Brisbane.
4. **P. Fumidus**, *Misk.*, Proc. R. Soc. Qd. vi. p. 264 (1889). | Brisbane.
5. **P. Eone**, *Feld.*, Wien. Ent. Mon. iv. p. 243, n. 89 (1860); *Reise Nov. Lep. ii.* p. 258, n. 304, t. 32, f. 8, 9 (1865); *Kirb.*, Cat. D. L. p. 408 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 28 (1878). | Cape York, Aru.

Genus 11, *UTICA*, *Hew.*

Ill. D. Lep. p. 56 (1865).

- \*1. **U. Onycha**, *Hew.*, Ill. D. L. p. 56, t. 24, f. 11, 12 (1865); *Herr.-Schff. (Lyc. O.)*, Stett. Ent. Zeit. p. 72, n. 26 (1869); *Kirb.*, Cat. D. L. p. 405 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 30 (1878). | R'ckhampton to Cape York.

Genus 12, *IALMENUS*, *Hubn.*Verz. bek. Schmett. p. 75 (1816); *Hew.*, Ill. D. Lep. p. 53 (1852).

1. **I. Eubulus**, *Misk.*, Trans. E. Soc. p. 457 (1876); *Kirb.*, Cat. D. L. Supp. p. 782 (1877). | R'ckhampt'n.
  2. **I. Evagoras**, *Don. (Pap. E.)*, Ins. N. H. t. 30, f. 1 (1805); *Hub.*, Zutr. Ex. Schmett. f. 175, 176 (1818); *Godt. (Myrina, E.)*, Enc. Meth. ix. p. 593, n. 3 (1819); *Bois. (Thecla, E.)*, Voy. Astr. Lep. p. 74 (1832); *Kirb.*, Cat. D. L. p. 406 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 30 (1878); *Math.*, Trans. E. Soc. p. 153 (1888); *Staud.*, Ex. Schmett. t. 95 (1888); (*Edwards, H.*), Vic. Nat. p. 3 (1890). | S. Australia, Victoria, N. S. Wales, Brisbane.
- POLYOM. CÆLESTIS, *Drap.*, Ann. Sc. Physc. Brux. ii. p. 354, t. 30, f. 3 (1819).

3. **I. Itonus**, *Misk.*, Proc. L. Soc. N.S.W. ser. 2, v. p. 41 (1890). Cape York.
4. **I. Ictinus**, *Hew.*, Ill. D. L. p. 54, n. 2, t. 24, f. 6-8 (1865); *Kirb.*, Cat. D. L. p. 406 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 30 (1878). Victoria,  
Brisbane to  
Cardwell.
- AUSTROMYRINA SCHRÆDERI, *Feld.*, Reise Nov. Lep. ii. p. 260, n. 308, t. 32, f. 12, 13 (1865).
- I. ILLIDGEI, *Lucas*, T. P., Proc. R. Soc. Qd. p. 156, f. 1, 2 (1889).
5. **I. Inous**, *Hew.*, Ill. D. L. p. 54, n. 3, t. 24, f. 1, 2 (1865); *Kirb.*, Cat. D. L. p. 406 (1871). S. Australia,  
Victoria.
- I. ICILIUS, *Hew.*, Ill. D. L. p. 54, n. 4, t. 24, f. 3 (1865); *Kirb.*, Cat. D. L. p. 406 (1871).
6. **I. Myrsilus**, *Doubl.*, List. Lep. B. M. 2, p. 29 (—); *D. H. and W. (Thec. M.)*, Gen. D. L. ii. p. 487, n. 138, t. 75, f. 3 (1852); *Kirb.*, Cat. D. L. p. 406 (1871). Tasmania,  
Victoria.
- THECLA CHLORINDA, *Blanch.*, Voy. Pole Sud. p. 401, t. 3, f. 15-18 (1853).
- \*7. **I. Dæmeli**, *Semp.*, Mus. Godf. Lep. xiv. p. 166 (1878). R'khampton.
- \*8. **I. Æneus**, *Tep. (Cupido, Æ.)*, Trans. R. Soc. S. Aust. iv. p. 29, t. 2, f. 9 (1882). S. Australia.
- \*9. **I. Eichorni**, *Staud.*, Ex. Schmiett. p. 275 (1888). Cooktown.

Genus 13, *HYPOLYCÆNA*, *Feld.*

Wien. Ent. Mon. vi. p. 293 (1862); *Hew.*, Ill. D. L. p. 48 (1865); *Moore*, Jour. A. Soc. B. liii. 2, p. 29 (1884); *Dist.*, Rhop. Malay. p. 255 (1885); *Trim.*, S. Af. Butt. p. 114 (1887); *de Nic.*, Butt. Ind. iii. p. 389 (1890).

MYRINA (*part*), *Westw.*, Gen. D. L. ii. p. 475 (1850-2).

AMBLYPODIA (*part*), *Trim.*, Rhop. Afr. Aust. ii. p. 226 (1866).

1. **H. Phorbas**, *Fab. (Hesp. P.)*, Syst. Ent. iii. 1, p. 277, n. 68 (1793); *Don. (Pap. P.)*, Ins. India, t. 41, f. 5 (1800); *Hew.*, Ill. D. L. t. 21, f. 5, 7, 8 (1865); *Butl.*, B. M. Cat. Fab. Lep. p. 186, n. 3 (1869); *Kirb.*, Cat. D. L. p. 406 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 31 (1878). Mackay to  
Cape York,  
Papua.
- ♀ H. DICTÆA, *Feld.*, Reise Nov. Lep. ii. p. 242, n. 272, t. 30, f. 19, 20 (1865).
- \*2. **H. Noctula**, *Staud.*, Ex. Schmiett. p. 283, t. 96 (1888). Cooktown.

Genus 14, *BINDAHARA*, Moore.

Lep. Cey. i. p. 111 (1881); *Dist.*, Rhop. Malay. p. 247 (1882-6);  
*de Nic.*, Butt. Ind. iii. p. 471 (1890).

SITHON (*part*), *Hubn.*, Verz. bek. Schmett. p. 77 (1816); *Moore*  
*(part)*, Proc. Z. Soc. p. 526 (1883); *Dist. (part)*, Rhop.  
 Malay. p. 253 (1882-6); *de Nic. (part)*, Butt. Ind. iii. p. 447  
 (1890).

MYRINA (*part*), *Latr. (nec Fab.)*, Enc. Meth. ix. pp. 11, 592  
 (1819-23); *Horsf.*, Cat. Lep. E. I. C. p. 116 (1829); *Westw.*,  
 Gen. D. L. p. 475 (1852); *Hew.*, Ill. D. L. p. 27 (1863).

1. **B. Sugriva**, *Horsf.*, Cat. Lep. E. I. C. p. 105,  
 n. 36, t. 1, f. 10, 10a, ♂, *Thec. S. in plate*  
 (1829); *Horsf. and Moore (Myrina, S.)*,  
 Cat. Lep. Mus. E. I. C. i. p. 51, n. 89,  
 t. 1a, f. 12 (1857); *Hew. (Myrina, S.)*,  
 Ill. D. L. p. 36, n. 29 (1862-78);  
*W. D. and H. (My. S.)*, Gen. D. L. ii.  
 p. 476 (1850-2); *Butl. (Myr. S.)*, B. M.  
 Cat. Fab. Lep. p. 183 (1869); *Kirb.*  
*(Sithon, S.)*, Cat. D. L. p. 414 (1871);  
*Dist.*, Rhop. Malay. p. 247, note (1882-6);  
*de Nic.*, Butt. Ind. iii. p. 475, n. 1011  
 (1890).

Cape York,  
 Solomon  
 Islands,  
 Aru, Java,  
 S. India,  
 Ceylon.

- ♂ MYRINA ISABELLA, *Feld.*, Sitzb. Ak. Wiss.  
 Wien. Math. Nat. Cl. xl. p. 451, n. 10  
 (1860); *Kirb. (Sithon, I.)*, Cat. D. L.  
 p. 414 (1871); *Semp. (Sithon, I.)*, Mus.  
 Godf. Lep. xiv. p. 31 (1878).

B. PHOCIDES, *Moore (nec Fab.)*, Lep. Cey. i.  
 p. 112, t. 42, f. 3, ♂, 3a, ♀ (1881); *Hew.*  
*(Myrina, P.)*, Ill. D. L. p. 36, n. 30  
 (1862-78).

- ♀ MYRINA JOLCUS, *Feld.*, Sitzb. Ak. Wiss. Wien.  
 Math. Nat. Cl. xl. p. 451, n. 11 (1860);  
*Hew. (Myr. J.)*, Ill. D. L. t. 13, f. 16, 17  
 (1862-78).

With great regard for the opinions of Messrs. Distant  
 and de Niceville, I have little doubt this, with  
*Phocides*, *Fab.*, and *Areca*, *Feld.*, all represent one  
 rather variable species. In one specimen I have,  
 from Ceylon, the blue in apical region of secondaries  
 is restricted to a mere marginal line, only just  
 perceptible; in a Cape York example the blue  
 patch is as broad as long, and nearly touches apical  
 angle, the underside of both being exactly alike,  
 and nearly as dark as in *Horsefield's* figure. The  
 development of the white area in secondaries of  
 ♀, and the lighter or darker shading of the under-  
 side, is so variable as to be quite unreliable for  
 specific distinction.



Genus 15, *DEUDORIX*, Hew.

Ill. D. L. p. 16 (1863); *Moore*, Lep. Cey. p. 102 (1881); *Dist.*, Rhop. Malay. p. 277 (1882-6); *de Nic.*, Butt. Ind. iii. p. 448 (1890).

1. **D. Epirus**, *Feld.* (*Myrina*, *E.*), Sitzb. Ak. Wiss. Wien. Math. Nat. Cl. xl. p. 452, n. 13 (1860); (*Dipsas*, *E.*), Reise Nov. Lep. ii. p. 241, n. 275 (1865); *Kirb.*, Cat. D. L. p. 416 (1871).  
D. DESPENA, *Hew.*, Ill. D. L. p. 18, n. 4, t. 6, f. 1, 3 (1863).  
Cape York, Amboina, Waigiou.
2. **D. Democles**, *Misk.*, Trans. E. Soc. p. 95 (1884).  
Johnstone R.
3. **D. Simsoni**, *Misk.*, Ent. Mo. Mag. xi. p. 165 (1874); *Kirb.*, Cat. D. L. Supp. p. 785 (1877).  
Brisbane to Cape York.
- D. VARUNA, *Semp.* (*nec Horsf.*, *nec Hew.*), Mus. Godf. Lep. xiv. p. 31 (1878).
4. **D. Diovis**, *Hew.*, Ill. D. L. p. 30, n. 9, t. 7, f. 10-12 (1863); *Kirb.*, Cat. D. L. p. 416 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 31 (1878).  
Brisbane, Mackay.

Genus 16, *ARHOPALA*, Bois.

Voy. Astr. Lep. p. 75 (1832); *de Nic.*, Butt. Ind. p. 226 (1890).

NARATHURA, *Moore*, Proc. Z. Soc. p. 835 (1878); *Dist.*, Rhop. Malay. p. 259 (1882-6).

NILASERA, *Moore*, Lep. Cey. i. p. 114 (1881).

PANCHALA, *Moore*, Proc. Z. Soc. p. 251 (1882); *Dist.*, Proc. Z. Soc. p. 272 (1882).

SATADRA, *Moore*, Jour. A. Soc. B. liii. 2, p. 38 (1884).

DARASAMA, *Moore*, l.c. p. 42 (1884).

FLOS AND JOIS, *Doh.*, Jour. A. Soc. B. lviii. 2 (1889).

AMBLYPODIA, *Auct.* (*nec Horsf.*)

1. **A. Amytis**, *Hew.* (*Amb. A.*), Cat. Lyc. B. M. p. 4, n. 16, t. 2, f. 7-9 (1862); *Kirb.*, Cat. D. L. p. 420 (1871); *Semp.* (*Amb. M.*), Mus. Godf. Lep. xiv. p. 32 (1878).  
Keppel Bay to C. York.
2. **A. Cyronthe**, *Misk.* (*Amb. C.*), Proc. L. Soc. N.S.W. ser. 2, v. p. 43 (1890).  
Cape York, Bowen.
3. **A. Eupolis**, *Misk.* (*Amb. E.*), l.c. 42 (1890).  
Cardwell to Cape York.
4. **A. Meander**, *Bois.*, Voy. Astr. Lep. p. 76 (1832); *Montr.*, Ann. Sc. Phys. Nat. Lyon. p. 403 (1856); *Hew.* (*Amb. M.*), Cat. Lyc. B. M. t. 2, f. 4-6 (1862); *Kirb.* (*Amb. M.*), Cat. D. L. p. 420 (1871); *Semp.* (*Amb. M.*), Mus. Godf. Lep. xiv. p. 32 (1878).  
Bowen to Cape York, N. Guinea, Aru.

5. **A. Wildei**, n. sp.

♂ UPPERSIDE.—Light, slightly lilacine, blue; outer borders of both wings somewhat narrowly, but distinctly, margined with black; costal borders of primaries suffused with black; abdominal border of secondaries light brown.

**UNDERSIDE.**—Silvery white, with light greyish brown borders, short bands and spots. *Primaries:* Costa bordered somewhat narrowly; outer border the same, with darker spots in it; a sub-basal spot, a larger central one, and an elongate one beyond, all within cell; a sub-apical diagonal band of four spots; two round spots, one above the other, towards hinder angle, well in from outer border; most of the spots showing a ring of white by reason of a slight greyish area surrounding them. *Secondaries:* The spots rather less pronounced than in primaries; some brown suffusion at base; a sub-basal row of three spots; two larger beyond, the upper and largest almost touching costa; a circular row just beyond the last from costa to abdominal margin, rather indistinct; another circular row from near apex, where it commences with a long oblong patch, the size of the spots gradually decreasing, some little distance from and continuing nearly parallel with outer border to some distance up abdominal margin; outer margin increasing in width as it approaches anal angle, and then narrowing off again to about halfway up abdominal margin is bordered with light grey-brown, but not sharply defined; inside this border a sub-marginal line of crescent-shaped marks; a round black spot at anal angle; above this a white sub-marginal line extending some little distance up abdominal margin.

♀ UPPERSIDE.—*Primaries*: Base, costal and outer margins widely black; hind margin narrowly black; rest of wing white; base slightly suffused with blue. *Secondaries*: Base black, slightly suffused with blue, costa narrowly black; outer margin black, widest at anal angle, the black extending into the wing along the veins; rest of wing white.

UNDERSIDE.—As in ♂.

Thorax and abdomen, both sexes, above black, beneath light grey.

Ex.: ♂ 40 mm.; ♀ 38 mm.

Hab. : Cairns. Coll. : Queensland Museum.

This remarkably characteristic species is represented by a single specimen of each sex, recently captured by the Museum collector (Mr. Wilde) at Cairns, both in a rather worn and broken condition. That such a conspicuously distinct insect as this should have been hitherto unknown shows how much has yet to be done before a thorough knowledge of our Rhopaloceros fauna has been achieved.

Genus 17, *OGYRIS*, *Westw.*

Gen. D. L. ii. p. 472 (1850-2).

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|-------------------|--|---|
| <p><b>1.</b></p>  | <b>O. Genoveva,</b> <i>Hew., ♀ Ex. Butt. i. Og. t. 1, f. 5, 6 (1853); Kirb., Cat. D. L. p. 423 (1871); Misk., Trans. E. Soc. p. 343, t. 15 (1883); Staud., Ex. Schmett. t. 96 (1888); Misk., Proc. L. Soc. N.S.W. ser. 2, v. p. 23 (1890).<br/>         ♂ O. ZOZINE, <i>Hew., Ex. Butt. i. Og. t. 1, f. 3, 4 (1853); Cat. Lyc. B. M. t. 1, f. 7 (1862).</i><br/>         ♂ O. DAMO, <i>Doubl., Brit. M. list.</i> </i> | Brisbane,<br>R'khampt'n<br><br><br><br><br><br><br> |
| <p>*<b>2.</b></p> | <b>O. Otanes,</b> <i>Feld., Reise Nov. Lep. ii. p. 217, n. 234, t. 28, f. 1-3 (1865); Kirb., Cat. D. L. p. 425 (1871); Tep., Trans. R. Soc. S.A. iv. p. 31, t. 2, f. 1 (1882);</i>   | S. Australia.<br><br><br><br><br><br><br>           |

- Misk.*, Proc. L. Soc. N.S.W. ser. 2, v. p. 23 (1890).
3. **O. Orontas**, *Hew.*, ♂ Cat. Lyc. B. M. p. 2, n. 9, t. 1, f. 8, 9 (1862); *Kirb.*, Cat. D. L. p. 425 (1871); *Misk.*, Proc. L. Soc. N.S.W. ser. 2, v. p. 24 (1890). N. S. Wales.
4. **O. Idmo**, *Hew.*, Cat. Lyc. B. M. p. 2, n. 7, t. 1, f. 3, 4 (1862); *Kirb.*, Cat. D. L. p. 425 (1871); *Misk.*, Proc. L. Soc. N.S.W. ser. 2, v. p. 24 (1890). W. Australia, S. Australia, Victoria.
5. **O. Abrota**, *D. W. and H.*, ♀ Gen. D. L. t. 75, f. 8 (1850-2); *Hew.*, ♂ Ex. Butt. i. Og. t. 1, f. 1, 2 (1853); *Kirb.*, Cat. D. L. p. 425 (1871); *Misk.*, Proc. L. Soc. N.S.W. ser. 2, v. p. 25 (1890). Victoria, N.S. Wales.
- O. CATHARINA, *Feld.*, Reise Nov. Lep. ii. p. 218, n. 235 (1865).
6. **O. Oroetes**, *Hew.*, ♀ Cat. Lyc. B. M. p. 3, n. 12, t. 1, f. 12, 13 (1862); *Kirb.*, Cat. D. L. p. 425 (1871); *Misk.*, Proc. L. Soc. N.S.W. ser. 2, v. p. 25 (1890). W. Australia, Victoria, Keppel Bay (Q'nsland).
7. **O. Amaryllis**, *Hew.*, Cat. Lyc. B. M. p. 3, n. 11, t. 1, f. 5, 6 (1862); *Kirb.*, Cat. D. L. p. 425 (1871); *Misk.*, Proc. L. Soc. N.S.W. ser. 2, v. p. 26 (1890). S. Australia, N. S. Wales.
- \*8. **O. Halmaturia**, *Tep.*, Nat. Ins. S. Aust. part ii. p. 12 (1890). S. Australia.
9. **O. Olane**, *Hew.*, Cat. Lyc. B. M. p. 2, n. 10, t. 1, f. 10, 11 (1862); *Kirb.*, Cat. D. L. p. 425 (1871); *Misk.*, Proc. L. Soc. N.S.W. ser. 2, v. p. 27 (1890). Victoria.
10. **O. Barnardi**, *Misk.*, Proc. L. Soc. N.S.W. ser. 2, v. p. 27 (1890). Dawson River (Q'nsland).

Genus 18, *LIPHYRA*, *Westw.*

Proc. E. Soc. ser. 3, ii. p. 31 (1864); *Dist.*, Rhop. Malay. p. 204 (1884); *de Nic.*, Butt. Ind. iii. p. 489 (1890).

STEROSIS, *Feld.*, Reise Nov. Lep. ii. p. 219 (1865).

1. **L. Brassolis**, *Westw.*, Proc. E. Soc. ser. 3, ii. p. 31 (1864); *Kirb.*, Cat. D. L. p. 419 (1871); *Butl.*, Trans. L. Soc. Zool. ser. 2, i. p. 546, n. 1 (1877); *Dist.*, Rhop. Malay. p. 204, n. 1, t. 22, f. 18, ♀ (1884); *Westw.*, Trans. E. Soc. p. 470, n. 11 (1888); *Staud.*, Ex. Schmett. p. 269, t. 94 ♂ (*nec* ♀) (1888); *Misk.*, Proc. R. Soc. Qd. vi. p. 264 (1889). Cardwell, Cooktown, Thursday Island, Malayana, India.

ST. ROBUSTA, *Feld.*, Reise Nov. Lep. ii. p. 219, n. 237, t. 27, f. 10, 11, ♀ (1865).

Family V., **HESPERIDÆ**, *Leach*.

Sam. Comp. p. 242 (1819); *Westw.*, Gen. D. L. p. 505 (1852); *Bates*, Jour. Ent. i. p. 219 (1861); ii. p. 177 (1864); *Trim.*, Rhop. Afr. Aust. p. 285 (1866); *Butl.*, Ent. Mo. Mag. vii. p. 55, 92 (1870); *Marsh and de Nic.*, Butt. Ind. i. p. 18 (1882).

HESPERIDÆ, *Westw.*, Int. Mod. Class. Ins. ii. p. 360 (1840); *Moore*, Lep. Cey. i. p. 156 (1881).

URBICOLÆ, *Scudd.*, Trans. Amer. Ent. Soc. vi. p. 69 (1877).

Genus 1, **CASYAPA**, *Kirb.*

Cat. D. L. p. 576 (1871).

CHÆTOCNEME, *Feld.*, Sitzb. Ak. Wiss. Wien. Math. Nat. Cl. xl. p. 460 (1860), *nom. præocc.*

1. **C. Critomedia**, *Guer.* (*Hesp. C.*), Voy. Coq. ii. t. 18, f. 6 (1829); *Kirb.*, Cat. D. L. p. 583 (1871). Brisbane,  
Cape York,  
N. Guinea,  
Aru.  
*THYMELE ODIX*, *Bois.*, Voy. Astr. Lep. p. 160, n. 2 (1832).  
*CHÆT. CARISTUS*, *Hew.*, Desc. Hesp. p. 21, n. 1 (1867); *Kirb.* (*Casy. C.*), Cat. D. L. p. 577 (1871); *Semp.* (*Casy. C.*), Mus. Godf. Lep. xiv. p. 45 (1878).
2. **C. Denitza**, *Hew.* (*Netrocoryne, D.*), Desc. Hesp. p. 22, n. 2 (1867); *Ex. Butt.* v. Hesp. f. 4 (1874); *Kirb.*, Cat. D. L. p. 621 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 45 (1878); *Staud.* (*Net. D.*), *Ex. Schmett.* t. 100 (1888). Brisbane to  
Cardwell,  
Pt. Darwin.
3. **C. Beata**, *Hew.* (*Netrocoryne, B.*), Desc. Hesp. p. 22, n. 1 (1867); *Ex. Butt.* v. Hesp. f. 2, 3 (1874); *Kirb.*, Cat. D. L. p. 621 (1871). Brisbane.

Genus 2, **NETROCORYNE**, *Feld.*

Reise Nov. Lep. iii. p. 507 (1867).

1. **N. Repanda**, *Feld.*, Reise Nov. Lep. iii. p. 507, n. 882, t. 70, f. 10 (1867); *Kirb.*, Cat. D. L. p. 621 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 48 (1878); *Math.*, Trans. E. Soc. p. 181, t. 6, f. 5 (1888). Sydney to  
Mackay.  
*GONIOLOBA VULPECULA*, *Pritt.*, Stett. Ent. Zeit. p. 187, n. 41, t. 3, f. 2a, b (1868); *Kirb.* (*Proteides, V.*), Cat. D. L. p. 596 (1871).



Genus 3, *ISMENE*, *Swain.*

Zool. Ill. i. t. 16 (1820-1); *Westw.*, Gen. D. L. p. 514 (1850-2);  
*Moore (part)*, Lep. Cey. p. 157 (1880-1).

HESPERIA (*part*), *Butl.*, Ent. Mo. Mag. p. 58 (1870).

1. **I. Exclamationis**, *Fab. (Pap. E.)*, Syst. Ent. p. 530, n. 373 (1775); *Sp. Ins.* p. 131, n. 595 (1781); *Mant. Ins.* p. 84, n. 760 (1787); *Ent. Syst.* iii. p. 325, n. 232 (1793); *Butl. (Hesp. E.)*, B. M. Cat. *Fab. Lep.* p. 269, n. 1, t. 3, f. 2 (1869); *Kirb.*, Cat. D. L. p. 581 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 45 (1878); *Moore (Badamia, E.)*, Lep. Cey. p. 157, t. 66, f. 2 a, b (1880-1).

*PAP. LADON*, *Cram.*, Pap. Ex. iii. t. 284, G. (1782).

CALPODES FORULUS, *Hubn.*, Verz. bek. Schmett. p. 107, n. 1147 (1816).

2. **I. Discolor**, *Feld. (Goniloba, D.)*, Wien. Ent. Mon. iii. p. 405, n. 50 (1859); *Reise Nov. Lep.* iii. t. 72, f. 17 (1867); *Kirb.*, Cat. D. L. p. 582 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 46 (1878).
3. **I. Hurama**, *Butl. (Hesp. H.)*, Trans. E. Soc. p. 498 (1870); *Kirb.*, Cat. D. L. p. 655 (1871); *Butl. (Hesp. H.)*, Lep. Ex. p. 166, t. 59, f. 10 (1874); *Semp.*, Mus. Godf. Lep. xiv. p. 45 (1878).
4. **I. Chromus**, *Cram. (Pap. C.)*, Pap. Ex. iii. t. 284, E. (1782); *Latr. (Hesp. C.)*, Enc. Meth. ix. p. 744, n. 41 (1819); *Moore (Goniloba, C.)*, Proc. Z. Soc. p. 777 (1865); *Kirb.*, Cat. D. L. p. 583 (1871); *Moore (Parata, C.)*, Lep. Cey. p. 161, t. 65, f. 1 a, b (1880-1).
5. **I. Contempta**, *Plotz.*, Stett. Ent. Zeit. xlv. p. 56 (1884?) ; *Herr.-Schff.*, M.S.
6. **I. Doleschallii**, *Feld.*, Sitzb. Ak. Wiss. Wien. Math. Nat. Cl. xl. p. 460, n. 48 (1860); *Reise Nov. Lep.* iii. t. 72, f. 16 (1867); *Kirb.*, Cat. D. L. p. 582 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 46 (1878); *Staud.*, Ex. Schmett. t. 98 (1888).

Genus 4, *CARYSTUS*, *Hubn.*

Verz. bek. Schmett. p. 114 (1816).

- \*1. **C. Cæsina**, *Hew.*, Trans. E. Soc. ser. 3, ii. p. 491, n. 15 (1866); *Ex. Butt.* v. Hesp. t. 6, f. 57 (1873); *Kirb.*, Cat. D. L. Supp. p. 823 (1877).

Mackay to  
Cape York,  
Tonga,  
India,  
Ceylon.

Brisbane to  
Cardwell.

Cardwell to  
Cape York.

Brisbane to  
Mackay.

Cape York.

Cooktown,  
Molucca.

Herbert  
River to  
Cape York,  
Waigiou.

PAMPHILA ALBIFASCIA, *Misk.*, Proc. R. Soc.  
Qd. p. 148 (1889).

\*2. **C. Vallio**, *Mab.*, Comp. Rend. Ent. Belg. lx. N. Holland.  
p. 27 (1883?).

Genus 5, *PAMPHILA*, *Fab.*

Ill. Mag. vi. p. 287 (1807); *Westw.*, Gen. D. L. p. 521 (1850-2).

CHAPRA (*part*), *Moore*, Lep. Cey. p. 169 (1880-1).

TELICOTA (*part*), *Moore*, *l.c.* (1880-1).

1. **P. Augiades**, *Feld.*, Sitzb. Ak. Wiss. Wien. Brisbane to  
Math. Nat. Cl. xl. p. 461, n. 51 (1860); Bowen.  
(*Hesp. A.*), Reise Nov. Lep. iii. t. 72,  
f. 5 (1867); *Kirb.*, Cat. D. L. p. 601  
(1871); *Semp.*, Mus. Godf. Lep. xiv.  
p. 47 (1878).

2. **P. Autoleon**, *Misk.*, Proc. R. Soc. 2, p. 147 Cardwell,  
(1889). Cairns.

3. **P. Phineus**, *Cram.* (*Pap. P.*), Pap. Ex. ii. Sydney,  
t. 176, E. (1779); *Latr.* (*Hesp. P.*), Enc. Surinam.  
Meth. ix. p. 765, n. 107 (1819); *Kirb.*,  
Cat. D. L. p. 601 (1871); *Math.*, Trans.  
E. Soc. p. 179 (1888).

4. **P. Bambusæ**, *Moore*, Proc. Z. Soc. p. 691, t. 45, Cairns, India,  
f. 11, 12 (1878); *Distant* (*Telicota, B.*), Malayana.  
Rhop. Malay. p. 382, n. 2, t. 35, f. 12  
(1882-6).

5. **P. Olivescens**, *Herr.-Schff.*, Stett. Ent. Zeit. R'ekhampt'n,  
p. 79, n. 60, t. 3, f. 14 (1869); Ex. Cairns.  
Schmett. ii. f. 116 (1869); *Kirb.*, Cat.  
D. L. p. 601 (1871); *Semp.*, Mus. Godf.  
Lep. xiv. p. 47 (1878).

6. **P. Augias**, *Lin.* (*Pap. A.*), Syst. Nat. i. 2, Brisbane to  
p. 794, n. 257 (1767); Joh. Amœn. Acad. Mackay,  
vi. p. 410, n. 80 (1764); *Don.* (*Pap. A.*), Java, India,  
Ins. India, t. 48, f. 1 (1800); *Latr.* Ceylon.  
(*Hesp. A.*), Enc. Meth. ix. p. 767, n. 111,  
(1819); *Kirb.*, Cat. D. L. p. 601 (1871);  
*Semp.*, Mus. Godf. Lep. xiv. p. 47 (1878);  
*Dist.* (*Telicota, A.*), Rhop. Malay. p. 382,  
t. 34, f. 23 (1882-6); *de Nic.* (*Tel. A.*),  
Jour. A. Soc. B. lv. t. 17, f. 1 (1887);  
*Staud.*, Ex. Schmett. t. 99 (1888).

*P. ANCILLA*, *Herr.-Schff.*, Stett. Ent. Zeit.  
p. 79, n. 59 (1869).

7. **P. Mathias**, *Fab.* (*Hesp. M.*), Ent. Syst. Supp. Brisbane to  
p. 433, n. 289, 290 (1798); *Latr.* (*Hesp.* Cape York,  
*M.*), Enc. Meth. ix. p. 751, n. 61 (1819); Malayana,  
*Butl.* (*Epargyreus, M.*), B. M. Cat. Fab. India,  
Lep. p. 275, n. 1 (1869); *Butl.*, Proc. Z. Ceylon,  
Soc. p. 728, n. 1 (1870); *Kirb.*, Cat. D. L. Aden.

p. 598 (1871); *Druce*, Proc. Z. Soc. p. 109, n. 1 (1874); *Snell.*, Tijds. Ent. xix. p. 158, n. 76 (1876); *Moore* (*Hesp. M.*), Proc. Z. Soc. p. 594 (1877); *Semp.*, Mus. Godf. Lep. xiv. p. 46 (1878); *Mab.*, Ann. Soc. Ent. Belg. xxi. p. 37, n. 133 (1878); *Moore*, Proc. Z. Soc. p. 843 (1878); (*Chap. M.*), Lep. Cey. p. 169, t. 70, f. 1, 1a (1880-1); (*Chap. M.*), Proc. Z. Soc. p. 261 (1882); *de Nic.* (*Chap. M.*), Jour. A. Soc. B. lii. p. 99, n. 269 (1883); *Butl.* (*Chap. M.*), Proc. Z. Soc. p. 154, n. 32 (1883); *Kheil.*, Rhop. Ins. Nias. p. 38, n. 146 (1884); *Butl.* (*Parnara, M.*), Proc. Z. Soc. p. 493, n. 39 (1884); *Dist.* (*Baoris, M.*), Rhop. Malay. p. 380, t. 35, f. 10 (1882-6); *Forsay* (*Pam. M.*), Trans. E. Soc. p. 387 (1884).

CELÆNORRHINUS THRAX, *Hubn.*, Samm. Ex. Schmett. (1816-41); *Led.* (*Hesp. T.*), Verh. Zool. Bot. Ges. t. 1, f. 9, 10 (1855).

HESP. JULIANUS, *Latr.*, Enc. Meth ix. p. 763, n. 99 (1819).

P. MATTHIAS, *Butl.*, Trans. L. Soc. Zool. ser. 2, i. p. 554, n. 3 (1877); Proc. Z. Soc. p. 815, n. 40 (1877).

\*8. P. Ulama, *Butl.*, Trans. E. Soc. p. 504 (1870); *Kirb.*, Cat. D. L. p. 655 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 46 (1878).

9. P. Ohara, *Plotz.* (*Hesperilla, O.*), Stett. Ent. Zeit. xlv. p. 227 (1883?).

\*10. P. Sperthias, *Feld.* (*Hesp. S.*), Verh. Zool. Bot. Ges. xii. p. 492, n. 182 (1862); *Kirb.*, Cat. D. L. p. 601 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 46 (1878).

11. P. Fuliginosa, *Misk.*, ♀ Proc. R. Soc. Qd. vi. p. 147 (1889).

♂ UPPERSIDE.—As in ♀, with the addition of sexual oblique band on primaries.

UNDERSIDE.—All dense black, with bluish tinge, except apical area of primaries, which are light black, and abdominal area of secondaries, which have a reddish tinge; transverse row of bluish spots of secondaries less distinct than in ♀.

Ex.: 35 mm. Coll.: Queensland Museum. Collected at Cairns.

\*12. P. Argeus, *Plotz.* (*Hesperilla, A.*), Stett. Ent. Zeit. xlv. p. 227 (1883?).

Bowen.

Mackay,  
Cape York.

Sydney,  
Cooktown,  
Cape York.

Cardwell,  
Cairns.

Cape York.

- \*13. **P. Macleayi**, *Plotz.* (*Hesperilla*, *M.*), *l.c.* 226 (1883?). Australia.
- \*14. **P. Amalia**, *Semp.*, Mus. Godf. Lep. xiv. p. 183 (1878). R'khampton.
- \*15. **P. Impar**, *Mab.*, Compt. Rend. Ent. Belg. p. 46 (1883?). Australia.
- \*16. **P. Rectivitta**, *Mab.*, Pet. Nouv. Ent. ii. p. 237 (1878?). Australia?
- \*17. **P. Marnas**, *Feld.*, Sitzb. Ak. Wiss. Wien. Math. Nat. Cl. xl. p. 462, n. 53 (1860); *Kirb.*, Cat. D. L. p. 603 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 47 (1878). Bowen, Amboina.
- \*18. **P. Gracilis**, *Tep.*, Trans. R. Soc. S.A. iv. p. 34, t. 2, f. 7 (1881); *Nat. Ins. S.A.* p. 13 (1890). S. Australia.
- \*19. **P. Krefftii**, *Macleay*, *W.*, Proc. E. Soc. N.S.W. i. p. 54, n. 20 (1866); *Kirb.*, Cat. D. L. p. 602 (1871). Cape York.

Genus 6, *APAUSTUS*, *Hubn.*

Verz. bek. Schmett. p. 113 (1816).

ANCYLOXYPHA, *Feld.*

1. **A. Agraulia**, *Hew.* (*Ancy. A.*), Desc. Hesp. p. 45, n. 3 (1868); *Kirb.*, Cat. D. L. p. 609 (1871); *Oll.*, Ann. N. H. p. 360, t. 20, f. 3 a, b (1888). W. Australia, Victoria, N. S. Wales, Brisbane, Amboina.
- PAM. SUNIAS, *Feld.*, Sitzb. Ak. Wiss. Wien. Math. Nat. Cl. xl. p. 462, n. 54 (1860); *Kirb.*, Cat. D. L. p. 603 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 47 (1878).
2. **A. Minimus**, *Misk.*, Proc. R. Soc. Qd. p. 153 (1889). W. Australia, Victoria.
3. **A. Lascivia**, *Rosen.* (*Pamph. L.*), Ann. N. H. (5) xvi. p. 378, t. 11, f. 1 (1885). Victoria, Cairns.
- \*4. **A. Dolon**, *Plotz.*, Stett. Ent. Zeit. xlv. p. 166 (1884?); *H.-Schff.*, M.S. Australia.

Genus 7, *ASTICTOPTERUS*, *Feld.*

Wien. Ent. Mon. iv. p. 401 (1860); *Moore*, Lep. Cey. p. 162 (1880-1); *Dist.*, Rhop. Malay. p. 400 (1882-6).

CYCLOPIDES (*part*), *Hubn.*, Verz. bek. Schmett. p. 111 (1816); *Westw.*, Gen. D. L. p. 520 (1850-2); *Hew.*, Ex. Butt. v. (1874).

- \*1. **A. Argenteo-ornatus**, *Hew.* (*Cyc. A.*), Desc. Hesp. p. 41, n. 4 (1868); *Ex. Butt.* v. Cyc. and Hesp. f. 18, 19 (1874); *Kirb.*, Cat. D. L. p. 619 (1871). W. Australia.



- \*2. **A. Croites**, *Hew. (Cyc. C.)*, Ex. Butt. v. f. 14 (1874); *Kirb.*, Cat. D. L. Supp. p. 832 (1877). | Australia.
- \*3. **A. Cynone**, *Hew. (Cyc. C.)*, Ex. Butt. v. f. 17 (1874); *Kirb.*, Cat. D. L. Supp. p. 832 (1877). | Australia.

Genus 8, *PLESIONEURA*, *Feld.*

Wien. Ent. Mon. vi. p. 29 (1862); *Moore*, Lep. Cey. p. 176 (1880-1);  
*Dist.*, Rhop. Malay. p. 399 (1882-6).

1. **P. Feisthamelii**, *Bois. (Thymele, F.)*, Voy. Astr. Lep. 159, t. 3, f. 6 (1832); *Blanch. (Hesp. F.)*, Voy. Pole Sud. p. 403, t. 3, f. 19, 20 (1853); *Kirb.*, Cat. D. L. p. 620 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 48 (1878). | Cardwell to Cape York, Moluccæ.

Genus 9, *TRAPEZITES*, *Hubn.*

Verz. bek. Schmett. p. 112 (1816).

1. **T. Iacchus**, *Fabr. (Pap. I.)*, Syst. Ent. p. 533, n. 389 (1775); Sp. Ins. p. 135, n. 623 (1781); Mant. Ins. p. 88, n. 802 (1787); Ent. Syst. iii. p. 342, n. 301 (1793); *Don. (Pap. I.)*, Ins. N. H. t. 31, f. 1 (1805); *Latr. (Hesp. I.)*, Enc. Meth. ix. p. 252, n. 64 (1819); *Bois. (Steropsis, I.)*, Voy. Astr. Lep. p. 169, n. 3 (1832); *Kirb.*, Cat. D. L. p. 621 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 49 (1878). | Victoria, N. S. Wales, Brisbane to Cape York.

HESPERILLA JACCHUS, *Butl.*, B. M. Cat. Fab. Lep. p. 271, n. 2 (1869).

♂ HESPERIA MAHETA, *Hew.*, Ann. N. H. (4), xix. p. 80 (1877); *Kirb. (Pam. M.)*, Cat. D. L. Supp. p. 861 (1877).

- \*2. **T. Symmokus**, *Hubn.*, Zutr. Ex. Schmett. f. 225, 226 (1823); *Kirb.*, Cat. D. L. p. 621 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 48 (1878); *Math.*, Trans. E. Soc. p. 183 (1888); *Staud.*, Ex. Schmett. t. 100 (1888). | Brisbane to Cape York.
3. **T. Eliena**, *Hew.*, Desc. Hesp. p. 32, n. 24 (1868); *Herr.-Schff.*, Stett. Ent. Zeit. p. 80, n. 66, t. 3, f. 10 (1869); Ex. Schmett. ii. f. 115 (1869); *Kirb.*, Cat. D. L. p. 621 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 49 (1878). | Brisbane, R'khamp't'n.
4. **T. Idothea**, *Misk.*, Proc. R. Soc. Qd. p. 152 (1889). | Victoria.

5. **T. Phillyra**, *Misk.*, l.c. 153 (1889). Victoria.
6. **T. Phigalia**, *Hew.* (*Hesp. P.*), Desc. Hesp. p. 32, n. 23 (1868); *Herr.-Schff.*, Stett. Ent. Zeit. t. 3, f. 15 (1869); Ex. Schmett. ii. f. 117 (1869); *Kirb.*, Cat. D. L. p. 621 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 49 (1878). R'ckhampt'n, S. Australia.
7. **T. Petalia**, *Hew.* (*Hesp. P.*), Desc. Hesp. p. 32, n. 25 (1868); *Herr.-Schff.*, Stett. Ent. Zeit. t. 3, f. 11 (1869); Ex. Schmett. ii. f. 113 (1869); *Kirb.*, Cat. D. L. p. 621 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 49 (1878). S. Australia, Brisbane to Mackay.
- HESPERILLA LUTEA, *Tep.*, Trans. R. Soc. S.A. iv. p. 33, t. 2, f. 6 (1887).
- \*8. **T. Trimaculata**, *Tep.* (*Hesperil. T.*), Trans. R. Soc. S.A. iv. p. 32, t. 2, f. 4 (1881). S. Australia.

Genus 10, *HESPERIA*, *Fab.*

- Ent. Syst. iii. 1, p. 258 (1793); *Cuv.*, Tabl. Elem. p. 592 (1799); *Latr.*, Enc. Meth. ix. p. 11 (1819); *Moore*, Lep. Cey. p. 182 (1880-1).
- PYRGUS, *Hubn.*, Verz. bek. Schmett. p. 109 (1816); *Westw.*, Gen. D. L. p. 516 (1850-2).
- SYRICHtus, *Bois.*, Gen. Ind. Meth. p. 35 (1840).
- \*1. **H. Argina**, *Plötz.* (*Pyrgus, A.*), Stett. Ent. Zeit. xlv. p. 22 (1884?). Brisbane.

Genus 11, *HESPERILLA*, *Hew.*

Desc. Hesp. p. 37 (1868).

TELESTO, *Bois.*, Voy. Astr. Lep. p. 164 (1832); *non-desc.*

1. **H. Peronii**, *Latr.* (*Hesperia, P.*), Enc. Meth. ix. p. 763, n. 100 (1819); *Kirb.*, Cat. D. L. p. 622 (1871). Brisbane to R'ckhampt'n.
- TEL. PERRONII, *Bois.*, Voy. Astr. Lep. p. 164 (1832).
- TEL. KOCHII, *Feld.*, Verh. Zool. Bot. Ges. xii. p. 491, n. 179 (1862); *Herr.-Schff.*, Stett. Ent. Zeit. t. 3, f. 12 (1869); Ex. Schmett. ii. f. 114 (1869); *Semp.* (*Hesperil. K.*), Mus. Godf. Lep. xiv. p. 50 (1878).
- HESPERIL. DOCLEA, *Hew.*, Desc. Hesp. p. 39, n. 4 (1868); *Herr.-Schff.*, Stett. Ent. Zeit. p. 80, n. 62 (1869).
2. **H. Doubledayi**, *Feld.* (*Tel. D.*), Verh. Zool. Bot. Ges. xii. p. 491, n. 180 (1862); *Herr.-Schff.*, Stett. Ent. Zeit. t. 3, f. 10. Sydney to Mackay.

- (1869); Ex. Schmett. ii. f. 112 (1869); *Kirb.*, Cat. D. L. p. 622 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 50 (1878).
- H. DIRPHIA, *Herr.-Schff.* (*nec Hew.*), Stett. Ent. Zeit. p. 79, n. 61 (1869).
- ♀ TEL. LEACHII, *Feld.*, Verh. Zool. Bot. Ges. xii. p. 491, n. 181 (1862).
- \*3. H. **Dirphia**, *Hew.*, Desc. Hesp. p. 38, n. 2 (1868); Ex. Butt. v. Hesp. and Cyclop. f. 1-3 (1874); *Semp.*, Mus. Godf. Lep. xiv. p. 49 (1878). S. Australia, Cape York.
4. H. **Sexguttata**, *Herr.-Schff.* (*Tel. S.*), Stett. Ent. Zeit. p. 80, n. 64, t. 3, f. 16 (1869); Ex. Schmett. ii. f. 118 (1869); *Kirb.*, Cat. D. L. p. 622 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 50 (1878). R'ckhampt'n, Bowen.
5. H. **Halyzia**, *Hew.*, Desc. Hesp. p. 38, n. 1 (1868); Ex. Butt. v. Hesp. and Cyclop. f. 4-6 (1876); *Kirb.*, Cat. D. L. p. 622 (1871). Mackay, Bowen.
6. H. **Donnysa**, ♂ *Hew.*, Desc. Hesp. p. 39, n. 3 (1868); Ex. Butt. v. Hesp. and Cyclop. f. 7 (1874); *Kirb.*, Cat. D. L. p. 622 (1871). Victoria.
7. H. **Picta**, *Leach.* (*Hesp. P.*), Zool. Misc. i. p. 126, t. 55, f. 4, 5 (1815); *Latr.*, Enc. Meth. ix. p. 772, n. 122 (1819); *Bois.* (*Steropsis, P.*), Voy. Astr. Lep. p. 167, n. 1 (1832); *Kirb.*, Cat. D. L. p. 622 (1871); *Semp.*, Mus. Godf. Lep. xiv. p. 50 (1878); *Math.*, Trans. E. Soc. p. 185, t. 6, f. 9, 9a (1888). Sydney.
8. H. **Ornata**, *Leach.* (*Hesp. O.*), Zool. Misc. i. p. 126, t. 55, f. 1-3 (1815); *Latr.*, Enc. Meth. ix. p. 772, n. 121 (1819); *Bois.* (*Steropsis, O.*), Voy. Astr. Lep. p. 168, n. 2 (1832); *Math.*, Trans. E. Soc. p. 187 (1888). Victoria, N. S. Wales, Mackay, Johnstone River.
9. H. **Drachmophora**, *Meyr.* (*Tel. D.*), Ent. Mo. Mag. p. 82 (1885). Tasmania, Victoria.
10. H. **Munionga**, *Oll.*, Trans. L. Soc. N.S.W. ser. 2, iv. p. 623 (1889). Mount Kosciusko.
- \*11. H. **Crypsargyra**, *Meyr.* (*Tel. C.*), *l.c.* ii. p. 829 (1887). N. S. Wales.
12. H. **Monticolæ**, *Oll.*, *l.c.* iv. p. 624 (1889). Mount Kosciusko.
- \*13. H. **Chaostola**, *Meyr.* (*Tel. C.*), *l.c.* ii. p. 830 (1887). N. S. Wales.

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|---|--------------------------------|
| *14. <b>H. Dactyliota</b> , <i>Meyr.</i> ( <i>Tel. C.</i> ), <i>l.c.</i> 831 (1887).  | W. Australia,<br>S. Australia. |
| *15. <b>H. Megalopsis</b> , <i>Meyr.</i> ( <i>Tel. M.</i> ), <i>l.c.</i> 832 (1887).  | Queensland.                    |
| 16. <b>H. Scepticalis</b> , <i>Rosen.</i> , ♀ <i>Ann. N. H.</i> (5) xvi. p. 379, t. 11, f. 2 (1885); ♂ <i>Misk.</i> , <i>Proc. R. Soc. Qd.</i> p. 149 (1889). | Victoria, Port<br>Darwin.      |
| *17. <b>H. Atralba</b> , <i>Tep.</i> , <i>Trans. R. Soc. S.A.</i> iv. p. 33, t. 2, f. 5 (1881).   | S. Australia.                  |
| *18. <b>H. Eaclis</b> , <i>Mab.</i> , <i>Comp. Rend. Ent. Belg.</i> p. 63 (1883?).  | Australia.                     |
| 19. <b>H. Atromacula</b> , <i>Misk.</i> , <i>Proc. R. Soc. Qd.</i> p. 148 (1889).   | Victoria.                      |
| 20. <b>H. Tasmanicus</b> , <i>Misk.</i> , ♀ <i>l.c.</i> 149 (1889).   | Tasmania.                      |
| 21. <b>H. Fulgidus</b> , <i>Misk.</i> , ♀ <i>l.c.</i> 151 (1889).   | Brisbane,<br>Mackay.           |
| 22. <b>H. Croceus</b> , <i>Misk.</i> , <i>l.c.</i> 150 (1889).  | Brisbane to<br>Cooktown.       |
| 23. <b>H. Humilis</b> , <i>Misk.</i> , ♂ <i>l.c.</i> (1889).  | Brisbane.                      |
| *24. <b>H. Praxedes</b> , <i>Plotz.</i> ( <i>Tel. P.</i> ), <i>Stett. Ent. Zeit.</i> xlv. p. 378 (1884?).   | P. Jackson.                    |
| *25. <b>H. Dominula</b> , <i>Plotz.</i> ( <i>Tel. P.</i> ), <i>l.c.</i> 379 (1884?); <i>Herr.-Schff.</i> , M.S.   | Tasmania.                      |
| *26. <b>H. Arsenia</b> , <i>Plotz.</i> ( <i>Tel. A.</i> ), <i>l.c.</i> 384 (1884?).   | Australia.                     |
| *27. <b>H. Parvulus</b> , <i>Plotz.</i> ( <i>Tel. P.</i> ), <i>l.c.</i> 379 (1884?); <i>Herr.-Schff.</i> , M.S.   | Australia.                     |
| *28. <b>H. Phlæa</b> , <i>Plotz.</i> ( <i>Tel. P.</i> ), <i>l.c.</i> 378 (1884?).   | Melbourne.                     |
| *29. <b>H. Extranea</b> , <i>Plotz.</i> ( <i>Tel. E.</i> ), <i>l.c.</i> 383 (1884?); <i>Herr.-Schff.</i> , M.S.   | Australia.                     |
| *30. <b>H. Quadrimaculata</b> , <i>Tep.</i> , <i>Trans. R. Soc. S.A.</i> iv. p. 32, t. 2, f. 2 (1881).  | S. Australia.                  |
| *31. <b>H. Rietmanni</b> , <i>Semp.</i> , <i>Mus. Godf. Lep.</i> xiv. p. 187 (1878).  | Sydney.                        |
| *32. <b>H. Ismene</b> , <i>Newm.</i> ; <i>Meyr.</i> ( <i>Tel. I.</i> ), <i>Ent. M. Mag.</i> p. 82 (1885).   |                                |

Genus 12, *TARACTROCERA*, *Butl.*

*B. M. Cat. Fab. Lep.* p. 279 (1869); *Ent. Mo. Mag.* p. 97 (1870); *Moore*, *Lep. Cey.* p. 172 (1880-1).

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| *1. <b>T. Flavovittata</b> , <i>Latr.</i> ( <i>Hesp. F.</i> ), <i>Enc. Meth.</i> ix. p. 768, n. 114 (1819); <i>Bois.</i> ( <i>Hesp. F.</i> ), <i>Voy. Astr. Lep.</i> p. 165, n. 1 (1832); <i>Kirb.</i> , <i>Cat. D. L.</i> p. 626 (1871); <i>Semp.</i> ( <i>Pam. F.</i> ), <i>Mus. Godf. Lep.</i> xiv. p. 48 (1878). | S. Australia,<br>Sydney to<br>Cape York. |
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*HESPERILLA BIFASCIATA*, *Tep.*, *Trans. R. Soc. S. Aust.* iv. p. 32, t. 2, f. 4 (1881).



- \*2. **T. Papyria**, *Bois.* (*Hesp. P.*), *Voy. Astr. Lep.* p. 166 (1832); *Kirb.*, *Cat. D. L.* p. 626 (1871).

*HESPERILLA FUMOSA*, *Guest*, *Trans. R. Soc. S.A.* v. p. 37 (1882).

- \*3. **T. Celæno**, *Cox*, *Ent.* iv. p. 402 (1873); *Kirb.*, *Cat. D. L. Supp.* p. 834 (1877).

Genus 13, *TAGIADES*, *Hubn.*

*Verz. bek. Schmett.* p. 108 (1816); *Moore*, *Lep. Cey.* p. 175 (1880-1); *Dist.*, *Rhop. Malay.* p. 385 (1882-6).

*PTERYGOSPIDEA*, *Wallen.*, *Rhop. Caffr.* p. 53 (1857).

1. **T. Gamelia**, *Misk.*, *Proc. R. Soc. Qd.* p. 146 (1889).

*T. JANETTA*, *Semp. (nec. Butl.)*, *Mus. Godf. Lep.* xiv. p. 51 (1878).

Genus 14, *EXOMETOECA*, *Meyr.*

*Trans. L. S. N.S.W.* ser. 2, ii. p. 833 (1887).

- \*1. **E. Nycteris**, *Meyr.*, *Proc. L. Soc. N.S.W.* ser. 2, ii. p. 833 (1887).

Genus 15, *CORONE*.

- \*1. **C. Ismenoides**, *Mab.*, *Pet. Nouv. Ent.* ii. p. 205 (1878?).

Genus 16, *EUSCHEMON*, *Doubl.*

*Stokes Aust.* i. App. p. 513 (1846); *Westw.*, *Gen. D. L.* p. 525 (1850-2).

1. **E. Rafflesia**, *Macl. (Hesp. R.)*, *King's Surv. Aust.* ii. p. 463, n. 162 (1827); *Doubl. (Eus. R.)*, *Stokes Aust.* i. App. p. 514 t. 3, f. 1, 2 (1846); *D. W. and H.*, *Gen. D. L.* t. 80, f. 5 (1850-2); *Kirb.*, *Cat. D. L.* p. 636 (1871); *Staud.*, *Ex. Schmett.* t. 100 (1888).

Richmond  
River to  
Johnstone  
River.

# APPENDIX OF REPUTED AUSTRALIAN SPECIES.

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- Papilio Clytia**, *Lin.*, Mus. Ulr. p. 296 (1764).  
**Amphiaraus**, *Feld.*, Verh. Zool. Bot. Ges. xiv. p. 321, n. 424, p. 369, n. 253 (1864).  
**Antinous**, *Don.*, Ins. N. H. t. 16 (1805).  
**Xuthus**, *Lin.*, Syst. Nat. i. 2, p. 751, n. 34 (1767).  
**Tachyris Athama**, *Luc. (Pier. A.)*, Rev. Zool. p. 336 (1852).  
**Eronia Iobæa**, *Bois.*, Voy. Astr. Lep. p. 57, t. 2, f. 5, 6 (1832).  
**Euplœa Eleutho**, *Quoy. (Dan. E.)*, Freyc. Voy. t. 83, f. 2 (1815).  
**Eschscholtzii**, *Feld.*, Reise Nov. Lep. ii. p. 345, n. 480 (1867).  
**Eleusina**, *Cram. (Pap. E.)*, Pap. Ex. iii. t. 266, D. (1782).  
**Climena**, *Cram. (Pap. C.)*, Pap. Ex. iv. t. 389, E. F. (1782).  
**Ypthima Chenui**, *Guer. (Sat. C.)*, Deless. Souv. Inde. ii. p. 77, t. 21, f. 2 (1843).  
**Crenis Drusius**, *Fab. (Pap. D.)*, Mant. Ins. ii. p. 32, n. 346 (1787).  
**Symphædra Æropus**, *Lin. (Pap. Æ.)*, Mus. Ulr. p. 256 (1764).  
**Charaxes Caphontis**, *Hew.*, Ex. Butt. iii. Char. t. 3, f. 14, 15 (1863).  
**Prothoe Australis**, *Guer. (Nymph. A.)*, Voy. Coq. t. 14, f. 4 (1829).  
**Danis Philostratus**, *Feld. (Lyc. P.)*, Reise Nov. Lep. ii. p. 264, n. 316, t. 33, f. 1, 2 (1865).  
**Lampides Hermus**, *Feld. (Lyc. H.)*, Sitzb. Ak. Wiss. Wien. Math. Nat. Cl. xl. p. 457, n. 33 (1860).  
**Macrophthalma**, *Feld. (Lyc. M.)*, Verh. Zool. Bot. Ges. xii. p. 483, n. 115 (1862).  
**Palemon**, *Cram. (Pap. P.)*, Pap. Ex. iv. t. 390, E. F. (1782).  
**Telicanus**, *Lang (Pap. T.)*, Verz. Schmett. p. 47 (1789).  
**Lycæna Micylus**, *Cram. (Pap. M.)*, Pap. Ex. iii. t. 282, F. G. (1782).  
**Puspa**, *Horsf. (Pol. P.)*, Cat. Lep. E. I. C. p. 67, n. 3 (1828).  
**Trapezites Tibullus**, *Fab. (Hesp. T.)*, Ent. Syst. iii. 1, p. 326, n. 235 (1793).



## SUPPLEMENT.

Since this work was in type opportunities have offered of recording some additional localities, and descriptions of two new species, as follows:—

**Hypochrysops Narcissus**, *Fab.* Hab.: Herberton. A specimen of the ♀, collected by Mr. Wilde.

**H. Ignita**, *Leach.* Hab.: Mackay (Turner).

**H. Apollo**, n. sp.

UPPERSIDE.—Wholly bright ferruginous; primaries with black marginal band commencing from about middle of costa, increasing in width towards apex, the whole area of which is widely black, and continued less widely quite to hinder angle.

UNDERSIDE.—*Primaries*: Light chestnut, scarlet at base; a light metallic blue longitudinal streak below and bordering costal vein to about half the length of wing from base; a small blue spot within and towards end of cell. *Secondaries*: Same colour, the scarlet at base extending well into cell, and above and beyond extremity of cell to outer border; two white spots between costal and sub-costal veins, near base; a white patch at apex; two white spots within cell, the outer one forming a short band terminating cell, each spot margined with silvery blue; from abdominal border near base two short transverse bands inwardly of scarlet, bordered on each side with a fine black line and then with silvery blue; another similar short band between the second and third median branches; between this and outer border an irregular transverse curved band from abdominal margin reaching to scarlet sub-apical area, bordered in same manner as last described, the silvery blue sometimes developing into triangular spots; an outer sub-marginal line of silvery blue, and beyond a narrow band of scarlet, surmounted by a line of black.

Thorax above and beneath dark brown.

Ex.: 45 mm. Hab.: Herbert River. Coll.: Turner.

The specimen—probably a ♀—from which the above description was made is in the possession of Mr. R. E. Turner, of Mackay, but is in so exceedingly mutilated a condition, being devoid of head and abdomen, and much rubbed, as to be only just capable of being provisionally described; it has, in fact, been preserved by being pressed in a book. Enough, however, remains to show that the finest Australian species of this beautiful genus has hitherto escaped discovery. It approaches somewhat to *Chrysanthis*, *Feld.*

**Ogyris Oroetes**, *Hew.*, ♀. Hab.: Mackay (Turner).

**Hesperilla Halyzia**, *Hew.*, ♀. Hab.: Herberton (Wilde).

**H. Senta**, n. sp.

♀. UPPERSIDE.—Light dull brown, darkest at base, with sub-diaphanous spots. *Primaries*: A series of four elongate spots transversely from costa, near apex, the lower being the smallest, and nearly round; a mid-costal one small; two at termination of cell; two others a little below and beyond the last; one between cell and sub-median, about half-way from base. *Secondaries*: A large discal spot; a curved series of six, nearly parallel with, and not far from, outer border, the apical one being much the largest, and the fourth and fifth larger than the remaining ones.

UNDERSIDE.—Lighter than upperside, the spots as above, but somewhat larger.

Thorax and abdomen, above, black; beneath, light brown.

Ex.: 31 mm. Hab.: Herberton. Coll.: Queensland Museum.

This is another species discovered by the Museum collector (Mr. Wilde) in the Cairns district. The specimen is somewhat worn, but is in sufficiently good condition to permit of its being readily described. Its nearest ally is *H. Picta*, *Leach.*





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| <i>Sabinus</i> ...       | 41    | <i>Symbiblis</i> ...    | 38     |                         |       |
| <i>Salamandri</i> ...    | 50    | <i>SYMMACHLAS</i> ...   | 16     | Vallio ...              | 75    |
| <i>SALAMIS</i> ...       | 41    | <i>Symmomus</i> ...     | 78     | <i>Vallivolans</i> ...  | 11    |
| <i>SALATURA</i> ...      | 22    | <i>SYMPHÆDRA</i> ...    | 83     | <i>Vamana</i> ...       | 28    |
| <i>SALPINX</i> ...       | 25    | <i>Syrius</i> ...       | 49     | <i>VANESSA</i> ...      | 39    |
| <i>Samoa</i> ...         | 56    | <i>SYRICHTUS</i> ...    | 79     | <i>Varaha</i> ...       | 29    |
| Sana ...                 | 9     |                         |        | Varius ...              | 9     |
| <i>SAPHARA</i> ...       | 25    |                         |        | <i>Varuna</i> ...       | 70    |
| <i>Sari</i> ...          | 11    | <i>Tabitha</i> ...      | 34     | <i>Velleda</i> ...      | 44    |
| Sarpedon ...             | 4     | <i>TACHYRIS</i> ...     | 13     | Vellida ...             | 40    |
| <i>SATADRA</i> ...       | 70    | <i>TAGIADES</i> ...     | 82     | Venilia ...             | 45    |
| <i>SATYRUS</i> ...       | 27    | <i>Taitensis</i> ...    | 29     | Virgo ...               | 9     |
| <i>Saundersii</i> ...    | 25    | <i>TARACTROCERA</i> ... | 81     | Viridis ...             | 25    |
| <i>Scepticalis</i> ...   | 81    | <i>Tasmanicus</i> ...   | 59, 81 | <i>Visala</i> ...       | 35    |
| <i>Schræderi</i> ...     | 68    | <i>Taygetus</i> ...     | 50     | <i>Vulpecula</i> ...    | 73    |
| <i>Scintillata</i> ...   | 53    | <i>TÉLCHINIA</i> ...    | 36     |                         |       |
| <i>SCOLITANTIDES</i> ... | 59    | <i>Telegonus</i> ...    | 4      | <i>Wallaceana</i> ...   | 13    |
| <i>Scottianus</i> ...    | 6     | <i>Telemachus</i> ...   | 3      | Wildei ...              | 71    |
| <i>Scottii</i> ...       | 45    | <i>TELESTO</i> ...      | 79     |                         |       |
| Scylla ...               | 21    | <i>Teliconus</i> ...    | 83     | <i>XANTHIDIA</i> ...    | 9, 11 |
| Scyllara ...             | 13    | <i>TÉLICOTA</i> ...     | 75     | <i>Xanthospilos</i> ... | 64    |
| Sebæ ...                 | 49    | <i>Tenella</i> ...      | 63     | <i>XENICA</i> ...       | 29    |
| Sempronius ...           | 46    | <i>Teredon</i> ...      | 4      | <i>Xuthus</i> ...       | 83    |
| <i>Senegalensis</i> ...  | 11    | <i>TERIAS</i> ...       | 8      |                         |       |
| Senta ...                | 85    | <i>Terminus</i> ...     | 33     | <i>YPHTHIMA</i> ...     | 36    |
| Serapis ...              | 49    | <i>Teutonia</i> ...     | 12     | <i>YPHTHIMA</i> ...     | 36    |
| Serpentata ...           | 63    | <i>THECLA</i> ...       | 48     |                         |       |
| Sexguttata ...           | 80    | <i>Thecla</i> ...       | 43     | <i>Zachæus</i> ...      | 33    |
| Shepherdi ...            | 45    | <i>Themis</i> ...       | 32     | Zelima ...              | 40    |
| <i>Simplex</i> ...       | 65    | <i>Theodote</i> ...     | 37     | <i>Zelinde</i> ...      | 31    |
| Simsoni ...              | 70    | <i>Therasia</i> ...     | 8      | <i>ZERITIS</i> ...      | 48    |
| <i>Simulata</i> ...      | 11    | <i>Thisorella</i> ...   | 18, 19 | <i>ZERITIS</i> ...      | 47    |
| <i>Singa</i> ...         | 30    | <i>Thrax</i> ...        | 76     | <i>ZERYTHIS</i> ...     | 48    |
| <i>Sinta</i> ...         | 9     | <i>THYCA</i> ...        | 14, 15 | <i>ZETIDES</i> ...      | 4, 5  |
| Sirius ...               | 33    | <i>THYMELE</i> ...      | 78     | <i>Zia</i> ...          | 34    |
| <i>SITHON</i> ...        | 69    | <i>Thyra</i> ...        | 48     | <i>Zitenius</i> ...     | 28    |
| Smilax ...               | 9     | <i>Tibullus</i> ...     | 83     | <i>ZIZERA</i> ...       | 61    |
| <i>Solandra</i> ...      | 28    | <i>Tiresias</i> ...     | 57     | <i>Zoilus</i> ...       | 26    |
| <i>SPALGIS</i> ...       | 47    | <i>TRUMALA</i> ...      | 22     | <i>Zephyrus</i> ...     | 34    |
| Sperthias ...            | 76    | <i>TISIPHONE</i> ...    | 30, 31 | <i>Zopyrus</i> ...      | 34    |
| <i>STALACTIS</i> ...     | 27    | <i>Titania</i> ...      | 20     | <i>Zoraide</i> ...      | 8     |
| <i>STEROPIS</i> ...      | 78    | <i>TRAPEZITES</i> ...   | 78     | <i>Zozine</i> ...       | 71    |
| <i>STEROSIS</i> ...      | 72    | <i>Trimaculata</i> ...  | 79     |                         |       |
| <i>Sthenelus</i> ...     | 4     | <i>Tristis</i> ...      | 29     |                         |       |
| <i>STICTOPLÆA</i> ...    | 25    | <i>Trochilus</i> ...    | 60     |                         |       |
| Strabo ...               | 52    | <i>Troilus</i> ...      | 7      |                         |       |
| <i>Suava</i> ...         | 11    | <i>Tulliolus</i> ...    | 24     |                         |       |
| <i>Subpallidus</i> ...   | 65    |                         |        |                         |       |

## ADDENDA.

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The following further notes are necessitated through my having overlooked a paper of Mr. Butler's in the Ann. and Mag. N. H. on some Australian species, which somewhat affects the synonymy in a few cases in my catalogue:—

### LYCÆNIDÆ.

**Lampides Palemon**, *Cr.* (p. 83). *Butler*, A. and M. N. H. (5) ix. p. 85 (1882). Melbourne.

I had regarded this as a reputed species only, but as this is the second recorded instance of its occurrence in Australia, it must be now included in the list.

### HESPERIIDÆ.

Page 80.—**Hesperilla Flammeata**, *Butl.* (*Tel. F.*), A. and M. N. H. (5) ix. p. 85 (1882).

This is, I think, undoubtedly = *H. Donnysa*; the distinctions are too trivial, especially being drawn from a single example of the former.

Page 81.—**H. Eclipsis**, *Butl.* (*Tel. E.*) ♂, A. and M. N. H. (5) ix. p. 86 (1882).

This is = *Atromacula (mih)*, which latter name will, of course, have to sink.

Page 81.—**H. Compacta**, *Butl.* (*Tel. C.*) ♂, A. and M. N. H. (5) ix. p. 87 (1882).

This is = *Scepticalis*, Rosen., which name also gives way.

Page 82.—**Taractrocera Papyria**, *Bois. (Hesp. P.) Butler*, A. and M. N. H. (5) ix. p. 87 (1882). Melbourne.

It is possible that my *Apastus Minimus* (p. 77) may be identical with the species intended by Bois.; it is certainly the only insect with which I am acquainted that will answer to his description—a rather crude one, only remotely even giving a clue to its size. If this should prove to be the case, it cannot remain in the genus *Taractrocera*, the antennæ of *Minimus*, as also of *Agraulia*, being distinctly hooked.

And touching *Agraulia*, this may be the same insect as described by Godart under the name of *Flavovittata*, of late included in the genus *Taractrocera*; at any rate, it is the nearest one I know to his description, although it seems strange that so experienced a lepidopterist as Hewitson should have overlooked Godart's species. If this be so, Tepper's *Hesperilla Bifasciata* will stand as a species, as it certainly is not = *Agraulia*.





# LIST OF AUSTRALIAN BUTTERFLIES FOR LABELLING COLLECTIONS.

---

|                             |                              |
|-----------------------------|------------------------------|
| LEPIDOPTERA, <i>Lin.</i>    | P. Lycaon, <i>Westw.</i>     |
| RHOPALOCERA, <i>Bois.</i>   | P. Ægistus, <i>Lin.</i>      |
| PAPILIONIDÆ, <i>Leach.</i>  | P. Agamemnon, <i>Lin.</i>    |
| PAPILIONINÆ, <i>Swain.</i>  | P. Macleaynus, <i>Leach.</i> |
| ORNITHOPTERA, <i>Bois.</i>  | P. Leosthenes, <i>Doub.</i>  |
| O. Poseidon, <i>Doubl.</i>  | P. Parmatus, <i>Gray.</i>    |
| O. Pronomus, <i>Gray.</i>   | P. Liris, <i>Godt.</i>       |
| O. Cassandra, <i>Scott.</i> | P. Leodamas, <i>Wall.</i>    |
| O. Richmondia, <i>Gray.</i> | P. Polydorus, <i>Lin.</i>    |
| PAPILIO, <i>Lin.</i>        | EURYCUS, <i>Bois.</i>        |
| P. Erectheus, <i>Don.</i>   | E. Cressida, <i>Fab.</i>     |
| P. Egipius, <i>Misk.</i>    | PIERINÆ, <i>Swain.</i>       |
| P. Ormenus, <i>Guer.</i>    | LEPTOSIA, <i>Hub.</i>        |
| P. Anactus, <i>Macl.</i>    | L. Crokera, <i>Macl.</i>     |
| P. Capaneus, <i>Westw.</i>  | ELODINA, <i>Feld.</i>        |
| P. Canopus, <i>Westw.</i>   | E. Angulipennis, <i>Luc.</i> |
| P. Ulysses, <i>Lin.</i>     | E. Egnatia, <i>Godt.</i>     |
| P. Sthenelus, <i>Macl.</i>  | E. Parthia, <i>Hew.</i>      |
| P. Sarpedon, <i>Lin.</i>    | E. Perdita, <i>Misk.</i>     |
|                             | E. Quadrata, <i>Butl.</i>    |



*TERIAS, Swain.*

T. Drona, *Horsf.*

T. Herla, *Macl.*

T. Sana, *Butl.*

T. Lineata, *Misk.*

T. Immaculata, *Misk.*

T. Smilax, *Don.*

T. Parvula, *Herr.-Schff.*

T. Varius, *Misk.*

T. Virgo, *Wall.*

T. Hecabe, *Lin.*

*PIERIS, Schr.*

P. Teutonia, *Fab.*

P. Scyllara, *Macl.*

*TACHYRIS, Wall.*

T. Melania, *Fab.*

T. Ega, *Bois.*

T. Asteria, *Misk.*

T. Ada, *Cr.*

*DELIAS, Hub.*

D. Aganippe, *Don.*

D. Harpalyce, *Don.*

D. Nigrina, *Fab.*

D. Argenthona, *Fab.*

D. Nysa, *Fab.*

D. Mysis, *Fab.*

D. Nigidius, *Misk.*

D. Inferna, *Butl.*

*CALLIDRYAS, Bois.*

C. Pyranthe, *Lin.*

C. Lactea, *Butl.*

C. Hinda, *Butl.*

C. Crocale, *Cr.*

C. Pomona, *Fab.*

C. Gorgophone, *Bois.*

C. Scylla, *Lin.*

*NYMPHALIDÆ, Swain.*

DANAINÆ, *Bates.*

*DANAIS, Latr.*

D. Hamata, *Macl.*

D. Affinis, *Fab.*

D. Petilia, *Stoll.*

D. Erippus, *Cr.*

D. Genutia, *Cr.*

*EUPLŒA, Fab.*

E. Niveata, *Butl.*

E. Tulliolus, *Fab.*

E. Darchia, *Macl.*

E. Misenus, *Misk.*

E. Hippias, *Misk.*





*E. Viridis, Butl.*

*X. Leprea, Hew.*

*E. Sylvester, Fab.*

*EPINEPHILE, Hubn.*

*E. Dardanus, Misk.*

*E. Abeona, Don.*

*E. Crithon, Misk.*

*E. Joanna, Butl.*

*E. Boreas, Misk.*

*E. Helena, Oll.*

*E. Monilifera, Moore.*

*E. Rawnsleyi, Misk.*

*E. Amycus, Misk.*

*HETERONYMPHA, Wallen.*

*E. Corinna, Macl.*

*H. Merope, Fab.*

*E. Euclus, Misk.*

*H. Duboulayi, Butl.*

*E. Boisduvalii, Luc.*

*H. Philerope, Bois.*

*E. Eichornii, Staud.*

*H. Banksii, Leach.*

*HAMADRYAS, Bois.*

*H. Cordace, Hubn.*

*H. Zoilus, Fab.*

*H. Digglesi, Misk.*

*SATYRINÆ, Bates.*

*H. Mirifica, Butl.*

*MELANITIS, Fab.*

*MYCALESIS, Hubn.*

*M. Leda, Lin.*

*M. Terminus, Fab.*

*XENICA, Westw.*

*M. Sirius, Fab.*

*X. Achanta, Don.*

*M. Zia, Butl.*

*X. Klugii, Guer.*

*M. Perseus, Fab.*

*X. Hobartia, Westw.*

*M. Infuscata, Macl. W.*

*X. Lathoniella, Westw.*

*M. Modestus, Misk.*

*X. Orichora, Meyr.*

*HYPOCYSTA, Westw.*

*X. Kershawi, Misk.*

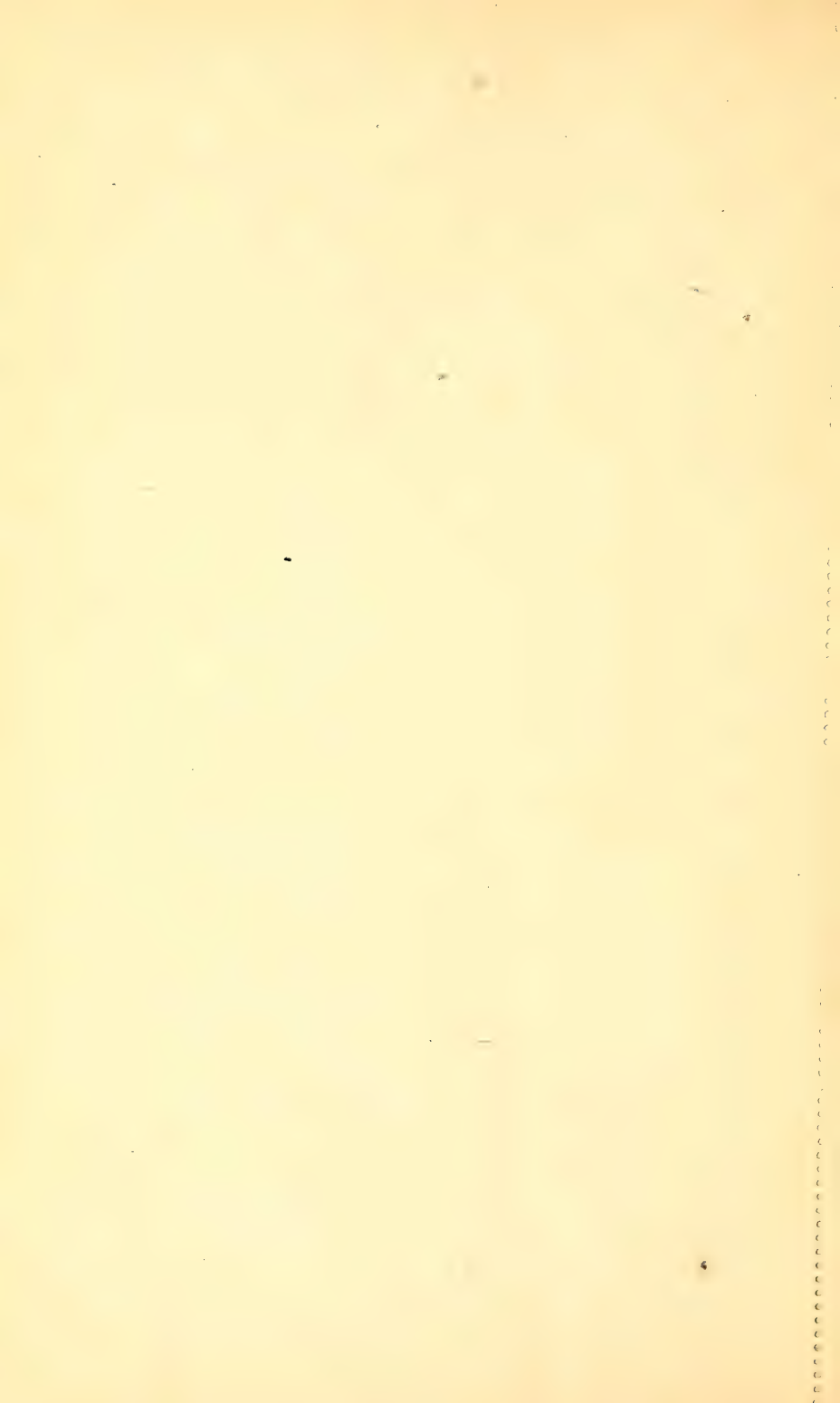
*H. Euphemia, D. W. H.*

*X. Ella, Oll.*

*H. Adiante, Hubn.*

*X. Correæ, Oll.*

*H. Irius, Fab.*

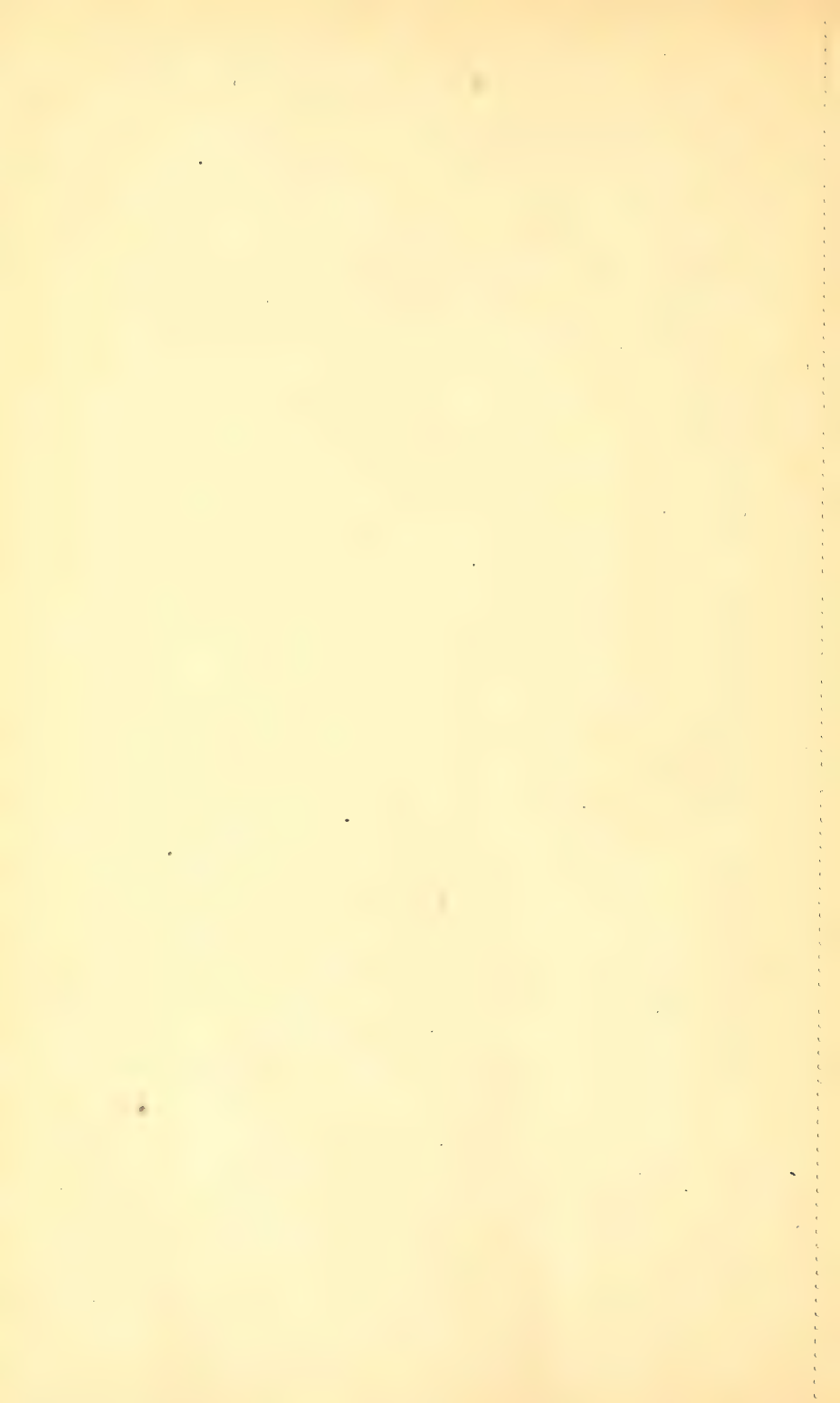


|                                 |                                    |
|---------------------------------|------------------------------------|
| H. Metirius, <i>Butl.</i>       | <i>JUNONIA</i> , <i>Hubn.</i>      |
| H. Antirius, <i>Butl.</i>       | J. Albicincta, <i>Butl.</i>        |
| H. Epirius, <i>Butl.</i>        | J. Vellida, <i>Fab.</i>            |
| H. Pseudirius, <i>Butl.</i>     | <i>PRECIS</i> , <i>Hubn.</i>       |
| H. Undulata, <i>Butl.</i>       | P. Zelima, <i>Fab.</i>             |
| <i>YPTHIMA</i> , <i>Hubn.</i>   | <i>RHINOPALPA</i> , <i>Feld.</i>   |
| Y. Arctous, <i>Fab.</i>         | R. Sabina, <i>Cr.</i>              |
| ACREINÆ, <i>Bates.</i>          | <i>DOLESCHALLIA</i> , <i>Feld.</i> |
| <i>ACRÆA</i> , <i>Fab.</i>      | D. Australis, <i>Feld.</i>         |
| A. Andromacha, <i>Fab.</i>      | <i>DIADEMA</i> , <i>Bois.</i>      |
| NYMPHALINÆ, <i>Bates.</i>       | D. Bolina, <i>Lin.</i>             |
| <i>CETHOSIA</i> , <i>Fab.</i>   | D. Misippus, <i>Lin.</i>           |
| C. Chrysippe, <i>Fab.</i>       | D. Alimena, <i>Lin.</i>            |
| C. Cyane, <i>Dru.</i>           | <i>NEPTIS</i> , <i>Fab.</i>        |
| C. Lamarekii, <i>Godt.</i>      | N. Shepherd, <i>Moore.</i>         |
| <i>MESSARAS</i> , <i>Doubl.</i> | N. Praslini, <i>Bois.</i>          |
| M. Prosopé, <i>Fab.</i>         | N. Venilia, <i>Lin.</i>            |
| <i>ATELLA</i> , <i>Doubl.</i>   | N. Consimilis, <i>Bois.</i>        |
| A. Propinqua, <i>Misk.</i>      | <i>CHARAXES</i> , <i>Ochs.</i>     |
| <i>ARGYNNIS</i> , <i>Fab.</i>   | C. Sempronius, <i>Fab.</i>         |
| A. Inconstans, <i>Butl.</i>     | <i>MYNES</i> , <i>Bois.</i>        |
| <i>PYRAMEIS</i> , <i>Hubn.</i>  | M. Geoffroyi, <i>Guer.</i>         |
| P. Itea, <i>Fab.</i>            | <i>ERYCINIDÆ</i> , <i>Swain.</i>   |
| P. Kershawii, <i>McCoy.</i>     | <i>LIBYTHÆINÆ</i> , <i>Bates.</i>  |
| P. Lucasii, <i>Misk.</i>        | <i>LIBYTHEA</i> , <i>Fab.</i>      |





- |                                 |                                   |
|---------------------------------|-----------------------------------|
| L. Myrrha, <i>Godt.</i>         | L. Strabo, <i>Fab.</i>            |
| LYCÆNIDÆ, <i>Steph.</i>         | L. Ancyra, <i>Feld.</i>           |
| LUCIA, <i>Swain.</i>            | L. Scintillata, <i>Luc. T. P.</i> |
| L. Lucanus, <i>Fab.</i>         | L. Nora, <i>Feld.</i>             |
| CHRY SOPHANUS, <i>Hub.</i>      | L. Boeticus, <i>Lin.</i>          |
| C. Aurifer, <i>Blanch.</i>      | L. Miskini, <i>Luc. T. P.</i>     |
| C. Ænea, <i>Misk.</i>           | L. Bochus, <i>Cr.</i>             |
| ZERITIS, <i>Bois.</i>           | L. Pavana, <i>Horsf.</i>          |
| Z. Thyra, <i>Lin.</i>           | L. Dion, <i>Godt.</i>             |
| DANIS, <i>Fab.</i>              | L. Cnejus, <i>Fab.</i>            |
| D. Sebæ, <i>Bois.</i>           | L. Argiades, <i>Pall.</i>         |
| D. Serapis, <i>Misk.</i>        | L. Dubiosa, <i>Feld.</i>          |
| D. Syrius, <i>Misk.</i>         | LYCÆNESTHES, <i>Moore.</i>        |
| D. Taygetus, <i>Feld.</i>       | L. Emolus, <i>Godt.</i>           |
| D. Cyanea, <i>Cr.</i>           | L. Godeffroyi, <i>Semp.</i>       |
| D. Coelestis, <i>Misk.</i>      | L. Phaseli, <i>Math.</i>          |
| D. Aleuas, <i>Feld.</i>         | L. Turneri, <i>Misk.</i>          |
| D. Macleayi, <i>Semp.</i>       | L. Tasmanicus, <i>Misk.</i>       |
| D. Arinia, <i>Ob.</i>           | L. Hypoleuca, <i>Pritt.</i>       |
| LAMPIDES, <i>Hubn.</i>          | LYCÆNA, <i>Fab.</i>               |
| L. Pseudocassius, <i>Murr.</i>  | L. Lulu, <i>Math.</i>             |
| L. Berenice, <i>Herr-Schff.</i> | L. Biocellata, <i>Feld.</i>       |
| L. Astraptes, <i>Feld.</i>      | L. Trochilus, <i>Frey.</i>        |
| L. Perusia, <i>Feld.</i>        | L. Gracilis, <i>Misk.</i>         |
| L. Lineata, <i>Murr.</i>        | L. Gaika, <i>Trim.</i>            |



L. Mackayensis, *Misk.*

H. Albosericea, *Misk.*

L. Lysimon, *Hub.*

*HYPOCHRYSOPS, Feld.*

L. Labradus, *Godt.*

H. Delicia, *Hew.*

L. Canescens, *Misk.*

H. Ignita, *Leach.*

L. Serpentata, *Herr-Schff.*

H. Olliffi, *Misk.*

L. Sulpitius, *Misk.*

H. Narcissus, *Feld.*

L. Mathewi, *Misk.*

H. Epicurus, *Misk.*

L. Hobartensis, *Misk.*

H. Apelles, *Fab.*

L. Agricola, *D. H. W.*

H. Hecalius, *Misk.*

L. Nigra, *Misk.*

H. Euclides, *Misk.*

L. Tenella, *Misk.*

H. Epicletus, *Feld.*

L. Conformis, *Butl.*

H. Eucletus, *Feld.*

L. Sylvicola, *Leach.*

H. Halyætus, *Hew.*

*HOLOCHILA, Feld.*

H. Apollo, *Misk.*

H. Xanthospilos, *Hub.*

*UTICA, Hew.*

H. Heathi, *Cox.*

U. Onycha, *Hew.*

H. Absimilis, *Feld.*

*PSEUDODIPSAS, Feld.*

H. Androdus, *Misk.*

P. Digglesi, *Hew.*

H. Cyprotus, *Oll.*

P. Ilias, *Feld.*

H. Uranites, *Mey.*

P. Brisbaneensis, *Misk.*

H. Cyanites, *Mey.*

P. Fumidus, *Misk.*

H. Erinus, *Fab.*

P. Eone, *Feld.*

H. Helenita, *Semp.*

*IALMENUS, Hubn.*

H. Margarita, *Semp.*

I. Eubulus, *Misk.*

H. Acasta, *Cox.*

I. Evagoras, *Don.*





I. Itonus, *Misk.*

I. Ictinus, *Hew.*

I. Inous, *Hew.*

I. Myrsilus, *D. H. W.*

I. Dameli, *Semp.*

I. Æneus, *Tep.*

I. Eichorn, *Staud.*

*HYPOLYCÆNA, Feld.*

H. Phorbas, *Fab.*

H. Noctula, *Staud.*

*BINDAHARA, Moore.*

B. Sugriva, *Horsf.*

*DEUDORIX, Hew.*

D. Epirus, *Feld.*

D. Democles, *Misk.*

D. Simsoni, *Misk.*

D. Diovis, *Hew.*

*ARHOPALA, Bois.*

A. Amytis, *Hew.*

A. Cyronthe, *Misk.*

A. Eupolis, *Misk.*

A. Meander, *Bois.*

A. Wildei, *Misk.*

*OGYRIS, Westw.*

O. Genoveva, *Hew.*

O. Otanes, *Feld.*

O. Orontas, *Feld.*

O. Idmo, *Hew.*

O. Abrota, *D. H. W.*

O. Oroetes, *Hew.*

O. Amaryllis, *Hew.*

O. Halmaturia, *Tep.*

O. Olane, *Hew.*

O. Barnardi, *Misk.*

*LIPHYRA, Westw.*

L. Brassolis, *Westw.*

HESPERIDÆ, *Leach.*

*CASYAPA, Kirb.*

C. Critomedia, *Guer.*

C. Denitza, *Hew.*

C. Beata, *Hew.*

*NETROCORYNE, Feld.*

N. Repanda, *Feld.*

*ISMENE, Swain.*

I. Exclamationis, *Fab.*

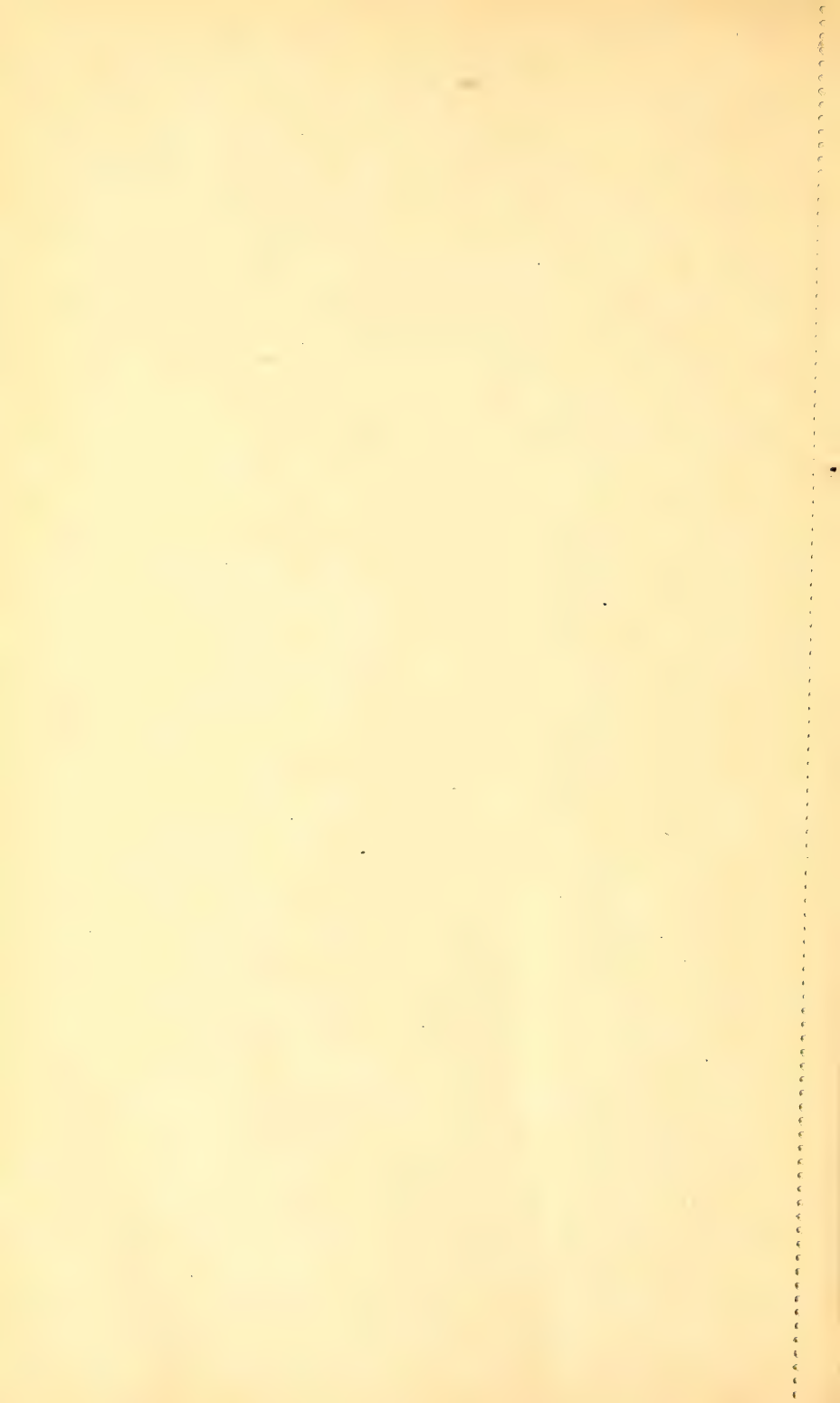
I. Discolor, *Feld.*

I. Hurama, *Butl.*

I. Cromus, *Cr.*

I. Contempta, *Plotz.*

I. Doleschallii, *Feld.*



*CARYSTUS, Hubn.*

C. Cæsina, *Hew.*

C. Vallio, *Mab.*

*PAMPHILA, Fab.*

P. Augiades, *Feld.*

P. Autoleon, *Misk.*

P. Phineus, *Cr.*

P. Bambusæ, *Moore.*

P. Olivescens, *Herr.-Schff.*

P. Augias, *Lin.*

P. Mathias, *Fab.*

P. Ulama, *Butl.*

P. Ohara, *Plotz.*

P. Sperthias, *Feld.*

P. Fuliginosa, *Misk.*

P. Argeus, *Plotz.*

P. Macleayi, *Plotz.*

P. Amalia, *Semp.*

P. Impar, *Mab.*

P. Rectivitta, *Mab.*

P. Marnas, *Feld.*

P. Gracilis, *Tep.*

P. Krefftii, *Macl. W.*

*APAUSTUS, Hub.*

A. Agraulia, *Hew.*

A. Minimus, *Misk.*

A. Lascivia, *Rosen.*

A. Dolon, *Plotz.*

*ASTICTOPTERUS, Feld.*

A. Argenteo-ornatus, *Hew.*

A. Croites, *Hew.*

A. Cynone, *Hew.*

*PLESIONEURA, Feld.*

P. Feisthamelii, *Bois.*

*TRAPEZITES, Hubn.*

T. Iacchus, *Fab.*

T. Symmomus, *Hub.*

T. Eliena, *Hew.*

T. Idothea, *Misk.*

T. Phillyra, *Misk.*

T. Phigalia, *Hew.*

T. Petalia, *Hew.*

T. Trimaculata, *Tep.*

*HESPERIA, Fab.*

H. Argina, *Plotz.*

*HESPERILLA, Hew.*

H. Peronii, *Latr.*

H. Doubledayi, *Feld.*

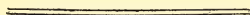
H. Dirphia, *Hew.*

H. Sexguttata, *Herr.-Schff.*





|                               |                                |
|-------------------------------|--------------------------------|
| H. Halyzia, <i>Hew.</i>       | H. Arsenia, <i>Plotz.</i>      |
| H. Donnysa, <i>Hew.</i>       | H. Parvulus, <i>Plotz.</i>     |
| H. Picta, <i>Leach.</i>       | H. Phlæa, <i>Plotz.</i>        |
| H. Ornata, <i>Leach.</i>      | H. Extranea, <i>Plotz.</i>     |
| H. Drachmophora, <i>Meyr.</i> | H. Quadrimaculata, <i>Tep.</i> |
| H. Munionga, <i>Oll.</i>      | H. Rietmanni, <i>Semp.</i>     |
| H. Crypsargyra, <i>Meyr.</i>  | H. Ismene, <i>Newm.</i>        |
| H. Monticolæ, <i>Oll.</i>     | H. Senta, <i>Misk.</i>         |
| H. Chaostola, <i>Meyr.</i>    | <i>TARACTROCERA, Butl.</i>     |
| H. Dactyliota, <i>Meyr.</i>   | T. Flavovittata, <i>Latr.</i>  |
| H. Megalopsis, <i>Meyr.</i>   | T. Papyria, <i>Bois.</i>       |
| H. Scepticalis, <i>Rosen.</i> | T. Celæno, <i>Cox.</i>         |
| H. Atralba, <i>Tep.</i>       | <i>TAGIADES, Hub.</i>          |
| H. Eaclis, <i>Mab.</i>        | T. Gamelia, <i>Misk.</i>       |
| H. Atromacula, <i>Misk.</i>   | <i>EXOMETOECA, Meyr.</i>       |
| H. Tasmanicus, <i>Misk.</i>   | E. Nycteris, <i>Meyr.</i>      |
| H. Fulgidus, <i>Misk.</i>     | <i>CORONE.</i>                 |
| H. Croceus, <i>Misk.</i>      | C. Ismenoides, <i>Mab.</i>     |
| H. Humilis, <i>Misk.</i>      | <i>EUSCHEMON, Doubl.</i>       |
| H. Praxedes, <i>Plotz.</i>    | E. Rafflesia, <i>Macl.</i>     |
| H. Dominula, <i>Plotz.</i>    |                                |





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# ANNALS

OF THE

## QUEENSLAND MUSEUM.

No. 2.

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ZOOLOGY OF BRITISH NEW GUINEA.

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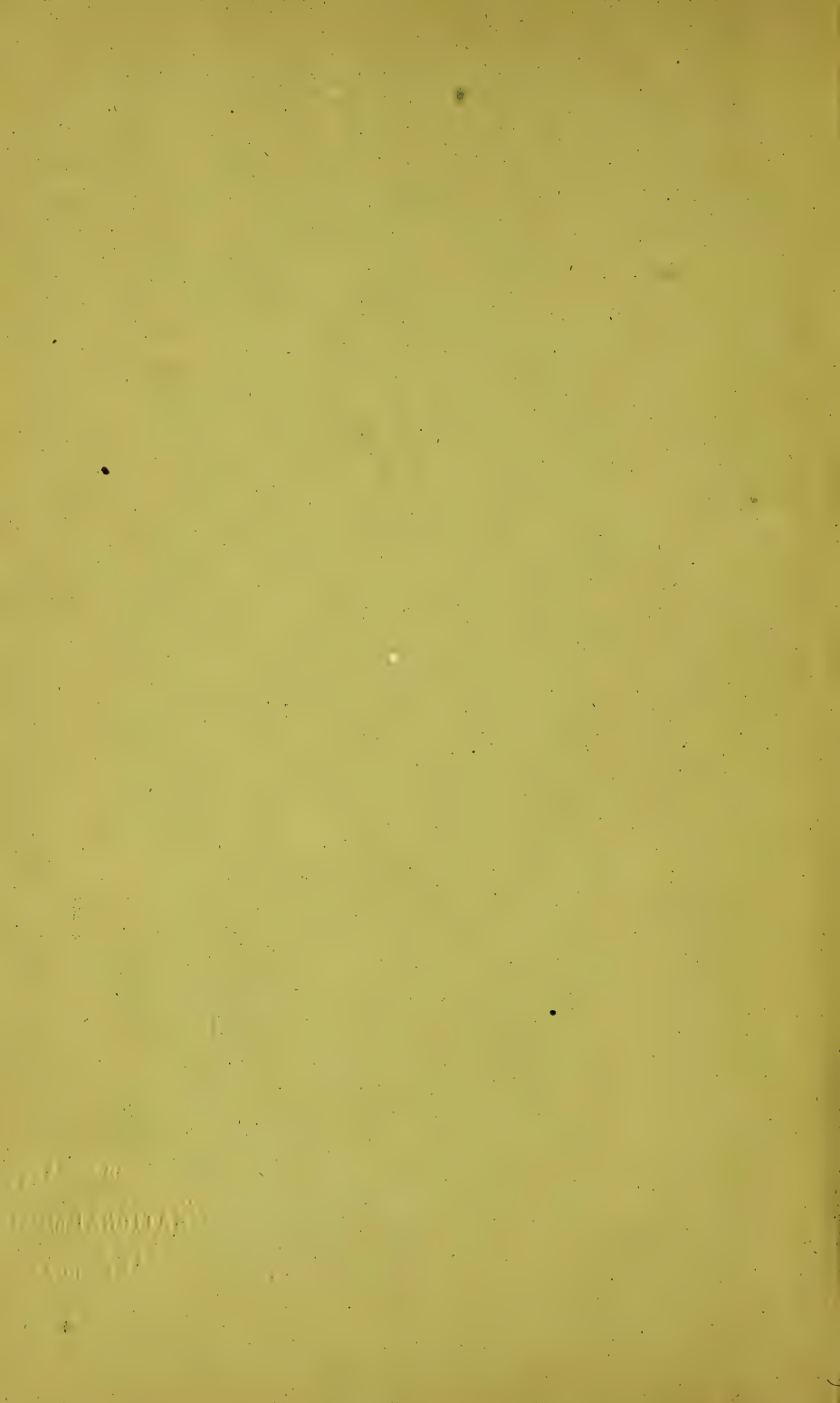
BY ORDER OF THE TRUSTEES.

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BRISBANE:  
JAMES C. BEAL, GOVERNMENT PRINTER, WILLIAM STREET.

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1892.





# ANNALS

OF THE

## QUEENSLAND MUSEUM.

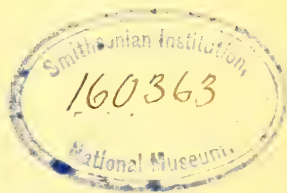
No. 2.

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### ZOOLOGY OF BRITISH NEW GUINEA.

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# ZOOLOGY OF BRITISH NEW GUINEA.

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THE present number contains the substance of Reports on the Zoological Collections made in 1890-91 in British New Guinea under the auspices of His Honour the Administrator. These Reports form the Appendices CC and DD to the Annual Report for the year 1890-91 of The Administrator, to the Queensland Government.

## Part I.—VERTEBRATA.

By C. W. DE VIS.

### MAMMALIA.

#### DUFAURE ISLAND.

##### MICROCHIROPTERA.

VESPERUGO ABRAMUS, *Temminck*. Numerous examples, all rather less in size than normal, and with some of the females rufous beneath.

##### RODENTIA.

HYDROMYS LEUCOGASTER, *Gould*.

#### TROUBRIANDS.

##### MICROCHIROPTERA.

PHYLLORHINA PYGMÆA, *Waterhouse*.

#### SUDEST.

##### MICROCHIROPTERA.

VESPERUGO ABRAMUS, *Temminck*. Of normal size.

NYCTOPHILUS TIMORIENSIS, *Geoffroy*.

#### RIGO DISTRICT.

##### MICROCHIROPTERA.

RHINOLOPHUS RUFUS, *Peters*.

#### MOUNT SUCKLING.

##### MARSUPIALIA.

CUSCUS MACULATUS, *Lesson and Garnot*.

## AVES.

## MOUNT SUCKLING.

## PSITTACIDÆ.

*DASYPTILUS PESQUETI*, Lesson. Male; the feathers of the back dark-brown, edged with black; iris "grey-brown." July, 1891, at 2,548 feet.

## MUSCICAPIDÆ.

*RHIPIDURA AURICULARIS*, De Vis. Male, July, 1891, at 6,000 to 7,000 feet.

*PACHYCEPHALA SCHLEGELII*, Rosenberg. Flank feathers tipped with olive green; edge of wing yellow, spotted with black; terminal feathers of lower back tipped with yellow; feet fuscous brown; axillaries pale yellow. The example previously recorded from Mount Owen Stanley shows the same traits of variation—possibly both may indicate a representative species. Male, July, 1891, at between 6,000 and 7,000 feet.

*PÆILODRYAS VICARIA*, n.s. Simulating *P. bimaculata*, Salvadori, but smaller; with the under wing-coverts partly white, and the abdomen and vent almost entirely black.

General colour, velvet black. Upper tail-coverts, a line broad on the side of the lower throat, becoming narrow on the side of the upper breast and extending thus partly across the latter, terminal half of the under wing-coverts, tips of some of the feathers of the lower abdomen and vent, and terminal two-thirds of the under tail-coverts white. Lower surface of wings and tail ashy black. Bill and feet black. Total length, 140; wing, 86; tail, 60; gape, 16.0; culmen, 11.0; tarsus, 23.0. Male, July, 1891, at between 6,000 and 7,000 feet.

*GERYGONE INSUPERATA*, n.s. Head, cheeks, ear-coverts, scapulars, back and upper tail-coverts brown with a pale fulvous wash; a narrow palpebral ring white. The lower surface and under tail-coverts white, rather sordid on the throat, and more distinctly stained with brown on the sides of the upper breast. Tail pale-brown on the basal half of the upper surface, the terminal half with a broad black band; the outermost feather with a large white subapical spot occupying both webs, the other laterals with a spot confined to the inner web and gradually decreasing in size, the median rectrices without spot; the tips of all uniform with the base. Wings above and wing-coverts fuscous brown, the quills narrowly edged with grey; beneath ashy brown, paler on the edges of the inner webs. Under wing-coverts white stained with brown. Bill and feet black. Total length, about 9.8; bill (?) basal half only; wing, 5.3; tail 4.6; tarsus, 16.0. One example in spirits, July, 1891, at between 6,000 and 7,000 feet.

## LANIIDÆ.

*PACHYCEPHALA SOROR*, Sclater. Tips of the terminal feathers of the lower back bright yellow, forming a narrow band. Male, July, 1891, at between 6,000 and 7,000 feet.

## MELIPHAGIDÆ.

MYZOMELA ROSENBERGII, *Schlegel*. Six adult males and one young male assuming adult livery, July, 1891, at 5,641 feet.

MELIPOTES MACULATA, *n.s.* Sides of breast with dark central spots. Head black; back and scapulars brown, slightly tinged with olive, the feathers with faintly paler edges; lower back and upper tail-coverts rather paler brown, uniform. Lower surface grey, paler on the throat; margins of the feathers of the upper breast and of the sides of the lower breast grey, centres of the latter dark fuscous forming distinct spots. Centre only of lower breast and abdomen tinged with fulvous. Edge of wing, under wing-coverts, and under tail-coverts pale sordid fulvous. A ridge of feathers longer than those of the throat proceeding from the lower base of the mandible beneath the wattle dark-brown, tipped with grey. Upper surface of wings, tail, and wing-coverts brown; the primaries narrowly, the secondaries and coverts more broadly, edged with grey. Wings and tail below ashy brown; inner edge of remiges sordid grey. Bill black with the tip brown; feet washed with lead colour. Total length, 190.0; wing, 113.0; tail, 114.0; gape, 22.0; culmen, 16.5; tarsus, 31.0. Female, July, 1891, at between 6,000 and 7,000 feet.

This bird has a longer bill, wing, and tail than *M. fumigatus*, *Meyer*, and is further distinguished by the regularly disposed blackish spots on the sides of the lower breast. It is clearly not represented by the figure of *M. fumigatus* in the *Zeitschrift für die Ges. Ornith.*, 1886, Heft II.

I here insert a description which should have appeared in my Report on the Owen Stanley birds:—

## TIMELIIDÆ.

AMALOCICHLA, *n.g.* Bill geocichline, but with the nostril small and placed in the anterior end of the nasal groove, and with the under mandible straight as far as the tip, which is slightly deflected; mandibular notch shallow. Rictal bristles moderate. Wing short, rounded, concave; first primary about half its length shorter than the second; second to fifth, which is the longest, graduated. Tail of twelve feathers, rounded, shorter than wing. Tarsus elongate, slender, ocreate. Plumage soft and loose.

AMALOCICHLA SCLATERIANA, *n.s.* Above rufous brown; head smoky brown; the feathers of the hind-head with fuscous margins. Upper and under tail-coverts rufous; chin and throat white, appearing as an ill-defined gorget; the feathers with narrow pale-brown edges, forming obscure transverse bars. Feathers of the upper breast greyish-white, with broad smoky-brown margins forming an ill-defined pectoral band. Lower breast, sides of abdomen, and thighs grey; centre of abdomen white. Lores grey mottled with brown; cheeks, ear-coverts, and sides of neck rufous, grading to rufous brown, and edged with fuscous brown. Under wing-coverts and surface of quills ashy-brown, the latter with a large buff spot near the base of the inner webs of all but



the first three primaries, the spots forming a clearly defined band. Bill black; base of lower mandible and feet horn-brown. Length, 195·0; wing, 103·0; tail, 71·0; tarsus, 47·0; gape, 24·0.

Hab.: Mount Owen Stanley. Sex?

Notwithstanding the geocichline affinities of this bird apparent in the bill and under-wing pattern, the form of the wing seems to relate it to the *Timeliidæ* proper. Its nearest ally appears to be *Ptilopyga*.

#### STURNIDÆ.

*PARAMYTHIA, n.g.* Bill shorter than the head, notched at the tip, compressed, acuminate; fore part of upper mandible curving gently to the tip; culmen obtuse; tomium somewhat inflected. Nostril exposed, elongate-ovate, placed in the basal half of the nasal groove, with a superior membrane. A few small soft rictal hairs. Wing subacuminate, subelongate; the first primary in place as long as the eighth; the third, fourth, fifth, and sixth forming the tip of the wing and nearly equal, the fourth the longest. Tail longer than wing, cuneate. Tarsus moderate, with scutellation entire. A small bare spot behind the eye. Head crested.

*PARAMYTHIA MONTIUM, n.s.* Chin, throat, forecheek, lore, a narrow supraciliary line, and a broad frontal crest extending over crown black; synciput and crown cream-white, the latter slightly tinged with blue; breast, upper abdomen, thigh, hinder cheek, and a broad band across occiput and upper back dull blue; the rest of the upper surface bright olive-green. Lower abdomen, vent, under tail-coverts, and a hypochondrial patch dull golden-yellow. Wing above fuscous, the primaries narrowly edged with greenish grey, the rest with olive green. Tail above brown on the inner, dull blue on the outer webs; the median feathers blue on both webs. Lower surface of wing and tail brown, inner webs of remiges obscurely edged with ashy grey. Under wing-coverts ashy grey with dark brown tips. Bill black, legs and feet blackish brown; iris brown. Total length, 190·0; wing, 87·0; tail, 110·0; bill (gape), 16·0; tarsus, 30·0. Female, July 28, 1891, at 6,900 feet, Disappointment Rock.

#### PARADISEIDÆ.

*LOPHORHINA SUPERBA, Pennant.* Male; total length, 195·0; iris brown. July 9, 1891, at 4,350 feet.

*PAROTIA LAWESII, Ramsay.* Female, July 26, 1891, at 4,100 feet.

*ASTRARCHIA STEPHANIE, Meyer.* The lengthened feathers of the head and the neck form a frill on either side; chin feathers scaly, outer webs of secondary remiges without bronze reflections; iris brown. Two males, July 29, 1891, at 7,723 feet. Female, same place and time.

*EPIMACHUS MACLEAYANÆ, Ramsay.* Male; iris grey-blue. July 28, 1891, at 6,900 feet. Female, same place and time, the sexes being seen in separate companies. Agrees with the female described by Dr. Finsch in every detail but total length, which depends so much on the collector's judgment in making up a skin. As the female of this

species is ascertained, and as the young male does not agree with Finsch's description of the type of *E. meyeri*, it appears that the male of *E. meyeri* is yet to be discovered.

*CRASPEDOPHORA MAGNIFICA*, Vieillot. Male, July 2, 1891, at 1,500 feet.

*AMBLYORNIS SUBALARIS*, Sharpe. Male, July 25, 1891, at 4,100 feet; shot in the vicinity of the bower described by one of the party, as follows:—

"The bower is built of twigs arranged in the shape of a shallow circular basin, about 3 feet in diameter, the side being some 6 inches higher than the centre. The whole of the basin is covered with a carpet of the greenest and most delicate moss, which, as it is of a different kind to that growing around on the ground, trees, roots, &c., led me to conjecture had been planted by the bird itself. The surface is scrupulously cleared of all leaves, twigs, &c. In the centre of the basin a small tree, without branches, about 2 inches in diameter, is growing. Immediately around this tree, and supported by it to the height of about 2 feet, is erected a light structure of small sticks and twigs, placed horizontally, and crossing one another. On the extreme outer edge of the basin a more substantial collection of twigs had been built up, which was arched above so as to join the collection around the centre pole, leaving a clear space beneath for the bird to pass through in his gambols. The basin has two entrances leading into it. They are 4 or 5 inches apart, and are formed by a depression or gap in the outer rim. The bower is placed immediately to the right of the entrances. At the opposite side to the entrances, and on the highest part of the raised rim of the basin, is placed a quantity of black sticks (4 inches or so in length), black beans, and the black-wing coverings of large Coleoptera. Black is evidently the most attractive colour to this bird." It is clear that this bower resembles much that of *A. inornata*, as described by Beccari.

#### ST. AIGNAN.

##### MUSCICAPIDÆ.

*MONARCHA GUTTULATUS*, Garnot. Male; iris brown. July 4, 1891.

*MONARCHA CHALYBEOCEPHALUS*, Garnot. An example, with many partially concealed white-tipped feathers on the abdomen, vent, and under tail-coverts. A small patch of impure white on the middle of the lower breast, and a white feather on the side of the breast. Male, July 6, 1891.

##### LANIIDÆ.

*PACHYCEPHALA MELANURA*, Gould. Female; iris light reddish-brown. July 8, 1891.

##### MELIPHAGIDÆ.

*MYZOMELA NIGRITA*, G. R. Gray. Immature male, July, 1891.

## RENARD ISLAND.

(A small island adjacent to St. Aignan.)

## MUSCICAPIDÆ.

MONARCHA INORNATUS, *Garnot*. Female, June 6, 1891.MONARCHA CHALYBEOCEPHALUS, *Garnot*. Female, June 6, 1891.RHIPIDURA, *sp.* Male, June 7, 1891.

This bird agrees in all respects, so far as can be seen, with the Admiralty Islands species, *R. semirubra*, *Sclater*; but its condition is such that no definite conclusion respecting it would be safe.

## LANIIDÆ.

LALAGE KARU, *Lesson*. Male, June 3, 1891.

PACHYCEPHALA COLLARIS, *Ramsay*. Probably a local form of this species. The wings fuscous, coverts darker fuscous, inner webs of remiges towards the base buffy-white, legs and feet flesh coloured. Iris dark-grey. Male, June 3, 1891.

## MELIPHAGIDÆ.

ZOSTEROPS GRISEOTINCTA, *G. R. Gray*. Young male, June 3, 1891.

## STURNIDÆ.

CALORNIS CANTOROIDES, *G. R. Gray*. Young male, June 3, 1891. Iris yellowish-red.

## COLUMBÆ.

CALENAS NICOBARICA, *Linnaeus*. Female.

## CHARADRIDÆ.

CHARADRIUS FULVUS, *Gmelin*. Male, in winter plumage, July 3, 1891.

## SUDEST.

## CYPSELIDÆ.

COLLOCALIA FUCIPHAGA, *Thunberg*. Male; iris black. June 30, 1891.

## MUSCICAPIDÆ.

MONARCHA CHALYBEOCEPHALUS, *Garnot*. Male; tips of abdominal and crissal feathers, and under tail-coverts streaked with greyish white. These insular specimens seem to tend towards the evolution of a species with a white abdomen and under tail-coverts. July 1, 1891. Female, June 30, 1891.

RHIPIDURA SETOSA, *Quoy and Gaimard*. Female, June 30, 1891.

## LANIIDÆ.

EOPSALTRIA SUDESTENSIS, *n.s.* Head, wings, and tail dark-brown; back, scapulars, wing-coverts, and outer margins of remiges rufous brown; median rectrices tinged with rufous brown; a broad line from the nostril over the eye, cheeks, ear-coverts, and upper chest pale rufous brown; throat white, slightly tinged with brown; lower chest and abdomen white; under tail-coverts, under wing-coverts, and carpal edge white stained with brown; wing and tail beneath pale ashy-brown, the shafts fuscous above and white beneath; the inner webs of the

remiges grey beneath. Bill black, feet brown. Iris brown. Total length, 137·0; wing, 80·0; tail, 68·0; gape, 16·0; culmen, 11·5; tarsus, 17·5. June 30, 1891.

#### MELIPHAGIDÆ.

PTILOTTIS ANALOGA, *Reichenbach*. Male; iris brown. June 30, 1891; male, iris grey-brown.

#### PARADISEIDÆ.

CHLAMYDODERA CERVINIVENTRIS, *Gould*. Male, June 30, 1891.

#### FERGUSON ISLAND.

#### PARADISEIDÆ.

PARADISEA DECOBA, *Salvin and Godman*. Male in full plumage, female in full plumage.

#### NORMANBY ISLAND.

#### TRICHOGLOSSIDÆ.

LORIUS HYPENOCROUS, *G. R. Gray*. Male, immature, June 18, 1891.

#### TROUBRIANDS.

#### CUCULIDÆ.

LAMPROCOCCYX PÆCILURUS, *G. R. Gray*. Male; iris brown. July, 1891.

#### BARTLE BAY.

#### FALCONIDÆ.

UROSPIZIAS POLIOCEPHALUS, *G. R. Gray*. Young male, June 15, 1891.

#### MUSCICAPIDÆ.

MALURUS MORETONI, *n.s.* Similar to *M. alboscapulatus*, but the wings brown and the feet pallid.

Head, back, upper surface of tail, and all beneath black, with a slight blue sheen on the upper surface, duller beneath, and passing into brownish-black on the upper surface of the tail. Wing above and below pale greyish-brown; the innermost secondaries and upper coverts sooty-brown, the former edged narrowly, the latter broadly, with black. Scapulars white. Under wing-coverts white with black edges. Bill black; feet pale flesh-colour; iris brown. Total length, 120; wing, 45·0; tail, 51·0; gape, 14·0; culmen, 10·5; tarsus, 20·0. Male, June 15, 1891.

#### CAMPOPHAGIDÆ.

LALAGE TRICOLOR, *Swainson*. Male in immature plumage, June 12, 1891.

#### COLLINGWOOD BAY.

#### PARADISEIDÆ.

MANUCODIA ATRA, *Lesson*. Male, July 18, 1891.

#### GOURIDÆ.

GOURA VICTORIÆ, *Fraser*. Adult male; iris scarlet. August 2, 1891. Failing to discover any sensible difference in colouring or dimensions between this bird and *G. victoria*, I am constrained to believe that the species has a far more extended range than has hitherto been



credited to it. Its occurrence at the east end of the island tends to strengthen the suspicion that the distinguishing character of *G. beccarii* is accidental.

SAMARAI.

FALCONIDÆ.

LEUCOSPIZIAS LEUCOSOMUS, *Sharpe*. Male.

PARMIETTA.

DICÆIDÆ.

DICÆUM RUBROCORONATUM, *Sharpe*. Female; iris brown.

LALOKI.

ALCEDINIDÆ.

TANYSIPTERA GALATEA, *G. R. Gray*. Immature; May, 1891.

FIR-TREE POINT.

PELECANIDÆ.

FREGATA AQUILA. *Linnaeus*. Male, immature, August 4, 1891.

TALOKELE.

ARDEIDÆ.

HERODIAS INTERMEDIA, *Hasselt*. (Sex?) Iris yellow.

PANAPOMPOM.

MUSCICAPIDÆ.

MIAGRA PLUMBEA, *Vigers and Horsfield*. Male, July 9, 1891. Iris dark-brown.

LOCALITIES UNRECORDED.

ALCEDINIDÆ.

SAUROPATIS SAUROPHAGA, *Gould*.

SAUROPATIS SANCTA, *Vigers and Horsfield*. Two examples.

MUSCICAPIDÆ.

RHIPIDURA SETOSA, *Quoy and Gaimard*.

NECTARINIDÆ.

HERMOTIMIA ASPASIA, *Lesson*. Four males.

CYRTOSTOMUS FRENATUS, *S. Müller*. Female.

DICÆIDÆ.

DICÆUM RUBROCORONATUM, *Sharpe*. Two males, one female.

MELIPHAGIDÆ.

MYZOMELA NIGRITA, *G. R. Gray*.

ZOSTEROPS GRISEOTINCTA, *G. R. Gray*.

PARADISEIDÆ.

MANUCODIA COMRIEI, *Sclater*.

PARADISEA RAGGIANA, *Sclater*. Male.

CRASPEDOPHORA MAGNIFICA, *Vieillot*. Two males.

MEGAPODIDÆ.

MEGAPODIUS MACGILLIVRAYI, *G. R. Gray*.



## RALLIDÆ.

GYMNOCREX PLUMBEIVENTRIS, *G. R. Gray.*

## HÆMATOPODIDÆ.

HEMATOPUS LONGIROSTRIS, *Vieillot.*

## ARDEIDÆ.

ZONERODIUS HELIOSYLUS, *Lesson.*

## ANATIDÆ.

TADORNA RADJAH, *Garnot.*

## REPTILIA.

## TROUBRIANDS.

## LACERTILIA.

*Varanidæ.*VARANUS INDICUS, *Daudin.**Agamidæ.*GONIOCEPHALUS PAPUENSIS, *Macleay.**Scincidæ.*HETEROPUS FUSCUS, *Dumeril and Bibron.*

## OPHIDIA.

*Dendrophidæ.*DENDROPHIS PUNCTULATUS, *Gray.*

## SUDEST.

## LACERTILIA.

*Geckonidæ.*

GYMNODACTYLUS LOUISIADENSIS, *n.s.* Head much broader than the body, depressed, ovate; body convex; tail cylindrical, tapering. The hind limb protracted reaches the shoulder; digits moderately depressed at the base, strongly compressed beyond; basal phalanges with ten to eleven broad transverse plates. Rostral oblong, nearly twice as long as high, with a median groove above. Nostril between rostral, first supralabial, a large supranasal, and several nasals. Labials 12/10, mental triangular entering between first pair of chin-shields which are in contact behind it. Head minutely granular, the granules larger on the snout and supraorbital regions; back finely granular with small smooth tubercles disposed mesially in longitudinal, laterally in oblique, rows, of which the former are the more regular; twenty-six rows in all, defined beneath by a lateral fold on each side; tail above with larger flat granules and transverse rows of small tubercles at regular intervals along the basal half; below with the granules enlarging towards the mid line, which is broadly shielded by a series of transverse scutes; chin and throat minutely granular; breast and abdomen with larger flat imbricate cycloid scales. Above pale vinous grey with five broad dark-grey cross-bands becoming nearly black on their hinder edges, the first cross-band, V-shaped, running from eye to eye over the occiput; base of tail with broad nearly black rings, the intervals and the rest of the

tail white; lower surfaces sordid white. Total length, 130; length of head, 18; breadth of head, 13·5; body, 36·0; fore limb, 20·0; hind limb, 26·6; tail, 76·0.

*Scincidæ.*

*HINULIA JOBIENSIS*, *Meyer*.? Numerous examples with the digits shorter, the black spots on the side of the neck and shoulder small and continued serially from head to tail—differences which do not seem to be more than varietal.

*EMOA CYANOASTER*, *Lesson*.

*MOCOA NOCTUA*, *Lesson*.

*MOCOA CÆRULEOCAUDA*, *n.s.*

Body short, stout; tail slender; snout short, thick. Fronto-nasal broader than long, in sutural contact with rostral, equally so with frontal. Fronto- and interparietals fused. Parietals in sutural contact behind interparietal. One pair of large nuchals. Four supraoculars. Eight supraorbitals, the last minute. Fifth upper labial elongate, subocular. Ear-orifice much smaller than eye-slit, oval, vertical, with three minute lobules in front. Twenty-six smooth streaked scales round the body. Two pairs of preanals moderately enlarged. A dorso-lateral band from each supraciliary series inclusive, the sides of the neck, of the body, and base of tail black with brilliant metallic reflections, especially on the head. A vertebral band from rostral to base of tail, and a second from each supraorbital series inclusive becoming confluent on upper base of tail pale yellow, on the head darker and with golden reflections, and changing to blue on the hips; all the upper surface of the tail pure pale blue. Beneath pale shining buff, under surface of tail pale sordid blue at the base, purer towards tip. Limbs fuscous black spotted with white, blue, and buff. Total length, 100·0; length of head, 9·0; width of head, 5·7; body, 28·0; fore tail, limb, 13·0; hind limb, 18·0; tail, 63·0.

*EMOA CYANOASTER*, *Lesson*.

*EMOA BAUDINII*, *Gray*. Several examples of a scinc which is very possibly only a local variety of this species, with which it agrees in structural characters, but not in colouring. The upper and lateral surfaces are nearly black; there is a broad but obscure pale vertebral line from the occiput to the base of the tail, and a narrower but brighter line along the flank.

*HETEROPUS FUSCUS*, *Dumeril and Bibron*.

OPHIDIA.

*ENYGRUS CARINATUS*, *Schneider*.

MOUNT SUCKLING.

LACERTILIA.

*TILQUA GIGAS*, *Schneider*.

OPHIDIA.

*ACANTHOPHIS ANTARCTICA*, *Shaw*; var. *LÆVIS*, *Macleay*.

## Part II.—HEMIPTERA.

BY HENRY TRYON, ASSISTANT CURATOR.

## FAM. ARTHROPTERIDÆ.

1. *Coptosoma amœna*, Walker. Cat. Hem. Heter. i. p. 93 (1869).  
*Loc.*: St. Joseph River, Hall Sound (A. C. English); Rigi District (A. C. English); South Cape (T. H. Richards); Chad's Bay, Cloudy Bay, Glasgow Harbour, South Cape.

NOTE.—The examples from the St. Joseph River more nearly correspond with the type, as defined by Walker's description, than do those from the other localities mentioned. In the South Cape specimens the broad yellow streak on each side of the fore-border of the scutellum tends to become obsolete; each streak being represented by a series of two or more spots only, or even by a single one. In specimens also from each of the three first-mentioned localities, the lateral yellow stripes on the fore-border of the pronotum may be more or less broken up or invaded by inlets or islets of the prevailing black body-colour. Again, the yellow markings of the scutellum, in the form of small, irregular, sometimes anastomosing blotches, may be distributed over its entire surface, with the exception of its disc. The "longitudinal lanceolate yellow streak" of the scutellum may also disappear.

2. *Brachyplatys simplex*, sp. nov. Above almost black, with a slight æneous reflection, nitid; head and pronotum nearly impunctate, scutellum with very fine punctures; head with a few linear wrinkles, directed outwards from the central lobe. A narrow brown limb to prothorax, scutellum, and abdomen; a broader sub-marginal luteous line continuous along the sides of the pronotum and scutellum, or interrupted at the posterior lateral angles of the former. Basal joint of the antennæ, two spots on head beneath—one on each side of the rostrum when in repose, a narrow internally dentate sub-marginal line on the abdomen beneath, and a row of spots along the line of the spiracles, yellow. Antennæ and legs light fuscous. Corium, costa, and veins of membrane of fore-wings fuscous; membrane itself with a faint brownish suffusion. Length, 4 to 4½ lines. *Loc.*: Fly River (W. Froggatt).

3. *Brachyplatys paucifera*, Walker. Cat. Hem. Heter. i. p. 105.  
*Loc.*: Fly River (W. W. Froggatt).

NOTE.—A single hemipteron from the above locality is referred to *B. paucifera* with some misgivings. It would appear to be a larger insect than is the type, being 3½ instead of 3 lines in length. From the description also of Walker's species it might reasonably be inferred that in it the head was uniformly æneous black. In the Fly River insect before us, on the other hand, the head has a broad luteous band along its fore-border, including the dark-coloured central lobe and contiguous to a transverse narrow yellow line behind the latter.

4. *Brachyplatys pusilla*, sp. nov. Æneous black, piceous beneath, nitid except thorax beneath, minutely punctured. Head nearly as broad as the thorax, yellow above and beneath, hind-border above, the base of the middle lobe, and a more or less distinct clouded transverse band between the fore-border of the eyes, fuscous. Prothorax with three yellow lines, as follows:—(1) Bordering the antero-lateral angles; (2) a deeply undulating one behind the fore-border, but meeting it and the preceding line mid-way between the central point

and the sides, passing direct to the centre of the lateral border, continued along it and then bordering the postero-lateral angles; and (3) a continuous arched line, approaching No. 2 behind the centre of the fore-border, continued to the hind-border which it meets just internal to the postero-lateral angle. Scutellum conspicuously emarginate behind, the limb and a sub-marginal line yellow, with an intercepting impressed line separating them, also with a yellow band along the fore-border almost uniting with the sub-marginal line. Abdomen beneath with a yellow internally crenated border separated by a piceous line from a yellow internally deeply serrated interrupted band of the same colour. Legs, yellow. Length,  $2\frac{1}{4}$  lines. *Loc.*: Toko, Fairfax Harbour.

NOTE.—The two specimens on which the above description is based may possibly be regarded as illustrating a variety of *B. ruptilinea*, Walker.

### FAM. PENTATOMIDÆ.

#### Sub-fam. Scutelleridæ.

5. *Calliphara Billardieri*, Fabr. S. R., p. 129, 4 (1803). Variety. *Loc.*: Kibola.

6. *Calliphara dimidiata*, Dallas. Catalogue of Hemiptera, i. p. 24, 8 (1851). *Loc.*: St. Joseph River (A. C. English); Ferguson Island (A. C. English).

NOTE.—Also occurs at Cape York.

7. *Calliphara (nobilis)*, Linn.)? *Loc.*: St. Joseph River (A. C. English); Sudest (3-7-91).

NOTE.—To the above are referred numerous examples of a very handsome insect which undoubtedly is comprised in the very limited section of *Calliphara*, which includes this species. However, Dumeril's description of *C. nobilis*, in the *Dictionnaire des Sciences Naturelles*, the only one available for reference, is too brief to suitably characterise the species, and therefore this identification, as a conclusion based on inadequate evidence, may prove incorrect.

8. *Philia senator*, Fabr; var. *cræsus*, Voll. *Loc.*: St. Joseph River (A. C. English).

NOTE.—This variety, as well as the typical species, is also met with in North-east Queensland, along the coast from the Herbert River northwards.

9. *Philia flammigera*, Walker. Cat. Hem. Heter. i. p. 42. *Loc.*: St. Joseph River (A. C. English).

10. *Philia flammigera*, Walker, var. One of the specimens from the St. Joseph River and another from Rigi present a distinct variation, having the portion of the pronotum behind the transverse furrow black. The scutellum behind its furrow is also of the same colour, but the part in front of the furrow is green, with coppery reflections. Again, the black portion of the scutellum is interrupted by central and subapical faint coppery-red transverse bands.

#### Sub-fam. Asopidæ.

11. *Platynopus tenellus*, Walker. Cat. Hem. Het. i. p. 127. *Loc.*: St. Joseph River (A. C. English).

NOTE.—A single specimen from the above locality presents nearly all the characters assigned by Walker to this species. It has, however, the head above brown with numerous green punctures, instead of being "black with four interrupted ochreous lines." Both insects measure  $4\frac{1}{2}$  lines in length.



12. *Arma prasina*, sp. nov. Dark-green, nitid, above thickly punctured, beneath impunctate except on hinder part of prothorax. Head above, except at the base and at the extremity of the middle lobe, orange with black punctures, a black line along each lateral border in front of the eyes, also at the junction of the middle and side lobes; ocelli red; antennæ with the 1st joint green, the 2nd joint distinctly shorter than the 3rd, and the latter than the 4th; rostrum with its 2nd joint very long, being about equal to the fore-tibia. Prothoracic spines well developed, stout, and directed slightly forwards, black, with their bases behind tinged with orange. A callous spot on each side of prothorax behind the fore-border. Scutellum extending just beyond the inner angle of the corium—it and the corium uniformly punctured. Membrane of fore-wings and its veins light-brown, a dark spot at its internal base. Under surface luteous along the middle line, gradually passing into the green of the margin. Femoral spines absent, the fore-tibia being alone armed, each with the small spine characteristic of the sub-family. Mesosternum with a distinct keel not continued on to the metasternum. Basal abdominal segment with an inconspicuous tuberosity only. Length,  $7\frac{1}{2}$  lines. *Loc.*: Fly River (W. W. Froggatt).

13. *Asopus reciproca*, Walker. Cat. Heter. Hem. ii. p. 340 (1867). *Loc.*: Taputa, Chad's Bay.

NOTE.—A single specimen of an *Asopus* from the above locality differs from the type of *Strachia reciproca* as defined by Walker by the absence of the whitish disc on the abdomen beneath. However, some of the bands which occur on the hinder borders of each segment are somewhat widened in the centre, and if this feature were exaggerated the condition met with in the type would result.

14. *Asopus glauco-limbata*, sp. nov. Black shining, very finely punctured. Head, a spot occupying each posterior lateral angle of prothorax and extending narrowly forwards along the side to the fore-border, the extreme base of fore-wing, a spot in the cell of the corium and a large spot extending across the base of the scutellum, and outer third of middle and hind-femora orange. Membrane of fore-wings dark piceous. Bucculi, coxæ, trochanters, and mesosternal keel light-green. An inwardly dentated band along each side of the abdomen beneath glaucous green. A callous on each side of fore-border of prostethium yellow. First and second joints of rostrum legs and two basal joints of antennæ yellowish-brown. Two terminal joints of rostrum and antennæ beyond base of third joint piceous. Sides of prothorax narrowly reflected, a narrow low ridge along its anterior border. Mesosternum with a low well-defined keel. Antennæ with the second joint only slightly exceeding the third. Rostrum with the second joint nearly as long as the third and fourth together. Length  $4\frac{1}{2}$  lines. *Loc.*: Taputa, Chad's Bay.

15. *Cermatulus pulcher*, sp. nov. Ovate, somewhat flattened above, very convex beneath. Head and pronotum obsoletely punctured. Scutellum and corium finely and shallowly so. Bright red, nitid. Head: a band along the fore-border of the pronotum, and a large sub-rotund spot occupying the hinder half of its disc; a large spot in the



centre of the corium of the fore-wings, extending from side to side and their membranes; portions of the pro-meso- and meta-stethium; a spot on the 3rd, 4th, and 5th ventral segments, internal to the spiracles, steel-blue, with purple reflections. Eyes, antennæ, rostrum, and legs piceous. A band on each side of the head beneath internal to the eyes luteous. Eyes prominent; head wide, with the central lobe narrow and excavated, and the lateral ones with oblique transverse striæ; ocelli red; antennæ rather slender, 2nd joint slightly longer than the 3rd, and 4th longer than either, basal joint extending a little beyond head; antennary tubercles unarmed; rostrum not quite extending to the hind-border of the meta-thorax; 2nd and 3rd joints subequal; bucculi very low, not hiding the 1st joint of the rostrum except at its extreme base. Pronotum with a small tooth at each anterior lateral angle, the fore-border and the lateral borders narrowly reflected. Scutellum triangular, narrowed before the extremity and extending just beyond the internal angle of the corium. Corium of fore-wings with the hind-border scarcely sinuate, apical angle acute. Connectivum extending beyond fore-wings—the latter also exceeding the body. A dull finely wrinkled space in front and behind each excretory orifice on thorax beneath. Femora unarmed. Tibiæ long and channelled throughout their entire length externally. Length, 9 lines; breadth, 6 lines. *Loc.*: Fly River (W. W. Froggatt).

Var. *α*. Whole under surface of thorax red.

Var. *β*. Pronotum, except at posterior lateral angles, wholly steel-blue.

*Sub-fam. Pentatomidæ.*

16. *Pentatoma sub-marginalis*, sp. nov. Above light brown, bright, thickly punctured, punctures piceous, eyes red; beneath æneous, brown, shining, a broad brownish white band bordering the ventral segments, the acetabular swellings also light-coloured. Head with the lateral lobes anteriorly rounded, slightly exceeding central lobe so as to cause a shallow emargination. Rostrum extending to the hind border of the second ventral segment, tip black. Antennæ puberulent, first joint not quite reaching the fore-border of head, second, third, and fourth joints subequal—the second, however, being slightly less than the third. The anterior lateral angles of the prothorax each with a blunt tooth. The callous spots at the basal angles of the scutellum piceous. Legs pubescent, with brown spots especially numerous on the femora; tibiæ channelled on their outer surfaces. Fore-wings with the membrane suffused with light-brown, its veins pale-brown also. Length,  $6\frac{1}{2}$  lines. *Loc.*: St. Joseph River (W. W. Froggatt); Laloki River; Fairfax Harbour.

NOTE.—This insect, which also occurs at Cairns, N.E. Queensland, is probably referable to the genus *Oncocoris*, Mayr. (*vid.*, Voy. Novara. Hemiptera); it also seems allied to *Pentatoma marginalis*, Walker (Cat. Hem. Heterop. ii., p. 306). It is, however, larger than the latter, the abdomen is not bordered by testaceous nor are the legs testaceous. Moreover, the transverse ridge connecting the posterior lateral angles of the thorax is pronounced, and there are indications of a light-coloured line along it.

17. *Pentatoma maculifer*, sp. nov. Above æneous black, shining, the prothorax and scutellum sparsely and shallowly punctured. Anterior border of pronotum narrowly and lateral borders broadly indefinitely luteous; abdomen above steel-blue; corium of fore-wings dark-brown, with a large luteous spot occupying the disc; membrane pellucid, with a faint-brownish tinge, its veins light-brown, beneath light-piceous, with luteous spots—scarcely distinct—at the sides of the abdomen. Antennæ yellowish-brown, with the last joint fuscous, their first joints extending beyond the head; the second and third joints subequal. Prothorax, without tooth at each anterior lateral angle, also without punctures on its hinder half; a transverse dense line of shallow punctures behind the fore-border; scutellum extending backwards as far as outer angle of corium, yellowish-coloured towards its extremity; legs yellowish-brown; tibiæ channelled on their outer surfaces. Length,  $6\frac{1}{4}$  lines. Fly River (W. W. Froggatt).

18. *Pentatoma prasina*, sp. nov. Grass-green, lighter beneath; eyes and abdomen above internal to the connexivum red; third, fourth, and fifth joints of the antennæ, rostrum, terminal joints of tarsi reddish-yellow; tip of scutellum yellow; terminal band on third, fourth, and one towards tip of fifth antennal joints, tip of rostrum, punctures on clavus of corium those on cell, as well as a large spot contiguous to its outer border, a broad outwardly narrowed ill-defined band at base of membrane and apex of abdomen above fuscous; corium with clavus and all cream-coloured (sometimes red), its embolium light-green. Punctured above and beneath, except at the sides of the meso- and meta-thorax; rostrum extending to hind-border of basal abdominal segment, its second joint little longer than its third. Scutellum extending beyond internal angle of corium; connexivum from basal abdominal segment backwards uncovered. Length, 4 to  $4\frac{1}{2}$  lines. Loc.: Laloki River.

NOTE.—It is with some diffidence that this insect, which occurs also in Australia, from Cairns to Moreton Bay, is regarded as a new species. The characters, however, which it presents do not seem to accord with those assigned to any of the recorded species of this genus.

19. *Eysarcoris affinis*, Dallas. Cat. Hemip., p. 227. Loc.: Toko, Fairfax Harbour; and Rigi (A. C. English).

NOTE.—The examples of *Eysarcoris* which are referred to this species may possibly, however, represent a distinct one. Their length is generally less than in the case of *E. affinis*, and the head has decided purplish metallic reflections, a feature which is not noted as occurring in the latter insect.

20. *Eysarcoris megaspiloides*, sp. nov. Dark fuscous, shining, thickly and coarsely punctured. Anterior lateral borders and a centrally callous band across the disc of prothorax, an isolated broad band on each side of the scutellum at its base and a crescentic band towards its apex, the costal margin of the corium at its base, an ill-defined patch on the pro- and mesostethium and the external angle of the metastethium, the connexivum and sides of the abdomen beneath yellowish-white. The cell of the corium of fore-wings and the dark speckled legs yellowish-brown. An irregular band on the femora and the last tarsal joints fuscous. Head blackish with purplish reflections, but without longitudinal tawny streaks. Rostrum and antennæ as

in *E. megaspilus*, Walk. Abdomen beneath uniformly coloured. Length, 2 to  $2\frac{1}{2}$  lines. *Loc.*: Toko, Fairfax Harbour; and Rigi (A. C. English).

21. *Accarana metallica*, Distant. Tr. Ent. Soc., Lond., 1888, pt. iv., p. 478. *Loc.*: St. Joseph River (A. C. English); Rigi District (A. C. English); and Dedele, Cloudy Bay.

22. *Allocotus sayeri*, Dist. Trans. Ent. Soc., Lond., 1888, iv., p. 477, pl. xiii, fig. 1. *Loc.*: Toputa, Cloudy Bay.

23. *Pæcilometis*, sp. Light piceous or dark reddish-brown, the second joint of antenna red, the third joint except at its proximal end fuscous; third joint rather more than twice the length of the second. Length, 8 lines. *Loc.*: South Cape (T. H. Richards).

NOTE.—This species, which is allied to an insect occurring at the Alice River, Queensland, is probably amongst the number of already described ones. The published characters of the members of this difficult genus, however, do not appear to be sufficiently distinctive to enable its identity to be established. It has the usual five lines on the scutellum and corium. The central line on the head is, however, only shortly continued on to the thorax, and the abdomen beneath has a luteous border.

24. *Spudæus variabilis*, sp. nov. More or less pubescent, light-brownish yellow; thickly and rather coarsely punctured, except beneath where the punctures are restricted to the thorax; punctures brown. A spot behind each eye, a band between the eye and the origin of the antenna, and continuous beyond the latter, green. The spines of the thorax, a line along the outer surface of the first antennal joint, the distal portions of the other joints, the tip of the rostrum, the anterior portion of the margin of each abdominal segment above, a broad spiracular band—extending forward to the propectus—on the abdomen beneath, and a line on each side of the outer surface of the tibiæ fuscous. Membrane of the fore-wings suffused with light-brown with its veins fuscous. A few piceous spots on femora. Antennæ with the relative lengths of the second and third joints variable (the second joint may equal two-thirds of the third, but is usually less). The rostrum extends backwards to the hind-border of the third abdominal segment. Prothorax with its sides bluntly toothed or crenated. The scutellum extends backwards beyond the inner angle of the corium, and is narrowed in front of its light-coloured tip. Length, 9-10 lines. *Loc.*: St. Joseph River (A. C. English); Rigi District (A. C. English); and Laloki River.

NOTE.—(a) In addition to the examples presenting the above characters, there are specimens which are more or less suffused with testaceous, the corium of the fore-wings appearing red by transmitted light; there may also be a spot of green punctures on each side of the pronotum in front; the pronotum also may have five (more or less) well-defined fuscous bands on its disc, and there may be a fuscous spot on each side of the scutellum at the base of the latter; the abdomen may also be uniformly light-coloured without spiracular band. (b) Possibly two species may be included in the above description, and distinguished by the shape which the extremity of each lateral lobe of the head presents, being either sub-angular or rounder. It seems, however, that we have here to deal with a sexual and so secondary character.



25. *Agonoscelis rutila*, Fabr. E.S. iv., 119-152 (1794). *Loc.*: Rigi (A.C. English); Toko, Fairfax Harbour; Fergusson Island.

NOTE.—The New Guinea examples of this species appear to constantly vary from those occurring in Queensland (e.g., at Cairns). The latter have the four quadrate black spots on the prothorax mentioned by Guérin—Revue Zoologique, iv., 262, ii. (1841)—whereas in the insects under observation the two spots on each side of the disc are united.

*Sub-fam. Tessaratomidæ.*

26. *Lyramorpha diluta*, Stal. Trans. Ent. Soc., Lond., ser. 3, vol. i., p. 598, 1863. *Loc.*: St. Joseph River (A. C. English); Rigi District (A. C. English).

NOTE.—The upper surface of the abdomen is pale-violet with a silky lustre.

27. *Lyramorpha maculifer*, sp. nov. Light-brown, the corium of the elytra more or less suffused with red; a broad band of punctures along the hind border of the pronotum, and a large round spot just within the inner angle of the corium piceous; a small pale luteous area in front of the spot of corium; abdomen above with light-green reflections; sides of abdominal segments and of triangular lateral anal lobes without trace of serrulations; these lobes longer than in *L. diluta*, Stal, and directed upwards. Seventh abdominal segment of male with the hind border slightly concave, but without central emargination, its lateral angles produced into stout blunt teeth. Male, 9.5 lines; female, 10.5 lines. *Loc.*: Kiwai, Fly River; and Toko, Fairfax Harbour.

NOTE.—Readily distinguished from *L. diluta* (and *L. rosea*, Westw.) by the absence of serrulations on the sides of the abdominal segments; from *L. diluta* also by the simple terminal abdominal segment of the male and by its smaller size. It may prove to be the *L. Vollenhovii*, Stal (Tijdschr. voor Ent. ser. 2, ii., p. 124, 1867), which is also a New Guinea insect. The description of this species is not, however, accessible for reference.

28. *Agapophyta bipunctata*, Boisd. Voy. de l'Astrol., Ent. ii., p. 626, pl. ii., fig. 5, 1835. *Loc.*: South Cape (T. H. Richards); Kibola; Taputa, Chad's Bay; Toko, Fairfax Harbour; St. Aignan (5-7-91); Laloki River.

29. *Oncomeris flavicornis*, Burm. Handb. ii., 1, p. 353, 1835. *Loc.*: St. Joseph River (A. C. English); Fergusson Island (A. C. English); Kiwai, Fly River (A. C. English).

30. *Plisthenes merianæ*, Fabr. *Loc.*: Rigi District (A. C. English); Fergusson Island (A. C. English); Sudest (3-7-91).

FAM. CIMICINA.

*Sub-fam. Dinidorinæ.*

31. *Megymenum dentatum*, Boisd. (*op. cit.*) *Loc.*: St. Joseph River (A. C. English).

32. *Megymenum insulare*, Westw. Hope Cat. Hem. 26. *Loc.*: St. Joseph River (A. C. English); Rigi District (A. C. English); Kiwai, Fly River (A. C. English); Laloki River; Toko, Fairfax Harbour.

NOTE.—The specimens of *M. insulare* from the above localities are quite similar in appearance to the common Queensland *Megymenum*, and do not even exhibit the slight features by which the two New Guinea species—*M. affine*, Boisd., and *M. affine*, Montr.—are, according to Stal. (*vid.* Kong. Sv. Vet-Akad., Band 9, No. 1, pp. 87, 88, Stockh. 1870), distinguished from the Australian insect.

## FAM. LYGÆIDÆ.

33. *Astacops anticus*, Walk. Hem. Heter. v., p. 35 (1872). *Loc.*: Laloki River; Chad's Bay.

NOTE.—The specimens—one only from each of the above localities—exhibit a broad red band crossing the corium of the elytra and apical third of the scutellum. This character is not referred to by Walker as being present in the type of *A. anticus*. It may therefore happen that we have to deal here with a species distinct from it.

34. *Astacops*, sp. *Loc.*: St. Aignan.

35. *Astacops*, sp. *Loc.*: Cloudy Bay.

36. *Lygæus dispar*, Walk. Hem. Het. v., p. 60 (1872). *Loc.*: Kiwai, Fly River (A. C. English); Toko, Fairfax Harbour.

37. *Lygæus pacificus*, Boisd. Voy. de l'Astr., Ent. ii. p. 639, pl. 11., fig. 20 (1835). *Loc.*: Kiwai, Fly River (A. C. English).

## FAM. PYRRHOCORIDÆ.

Sub-fam. *Larginæ*.

38. *Physopelta gutta*, Burm. Handb. II. i. p. 285, 9 (1835). *Loc.*: Kibola.

NOTE.—Occurring also in Queensland (Cape York to Brisbane).

Sub-fam. *Pyrrhocorinæ*.

39. *Dindymus pyrrhocrous*, Boisd. Voy. de l'Astr. Ent. II. p. 612, 3, pl. 11., fig. 9 (1835). *Loc.*: St. Joseph River (A. C. English); South Cape; Taputa, Chad's Bay.

NOTE.—It is submitted that *D. decusus*, Walker, will prove identical with this species.

40. *Dindymus*, sp. *Loc.*: Toko, Fairfax Harbour; Laloki River.

41. *Dindymus*, sp. *Loc.*: St. Aignan.

42. *Dindymus*, sp. *Loc.*: Rigi and Normanby Island.

43. *Dysdercus crucifer*, Stal. K. Vet.-Akad. Handl. Band. 9, No. I. p. 118 (1870). *Loc.*: Fairfax Harbour; Glasgow Harbour.

NOTE.—This insect occurs as far south in Queensland as Mackay. Notwithstanding its larger dimensions, *D. papuensis*, Distant, must be a closely allied insect.

44. *Dysdercus cingulatus*, Fabr. Syst. Ent. p. 719 (1775). *Loc.*: St. Joseph River (A. C. English); Rigi District (A. C. English); South Cape (T. H. Richards); Dufaure Island; St. Aignan.

NOTE.—Evidently, in these localities at least, a species of common occurrence.

45. *Dysdercus simplex*, Distant. Trans. Ent. Soc. Lond., 1888, p. 485. *Loc.*: St. Joseph River (A. C. English).

46. *Dysdercus sidæ*, Montr. et Sign. Ann. Soc. Ent. ser. iv., 1, p. 68 (1861). *Loc.*: Rigi (A. C. English).

NOTE.—Identical with a common Queensland insect which is usually referred to this species.

47. *Dysdercus*, sp. *Loc.*: Kiwai (A. C. English).

48. *Melamphaus circumdatus*, Walker. Cat. Hem. Heter., vi., 1873, p. 16. St. Joseph River (A. C. English); Fergusson Island (A. C. English).



49. *Melamphaus*, sp. *Female*: Black with dark steel-blue reflections. Prothorax posterior to the hinder transverse suture and on the sides—both above and beneath, corium, and abdomen, red. Membrane light orange. Scutellum with the tip and narrow reflexed margin luteous. Apical angles of corium crossed by a narrow fuliginous bar. Posterior border of pro- and meso-pectus whitish. Rostrum extending to hind-border of second abdominal segment, its first and second joints subequal, third rather less than second. Antennæ uniformly black; the apical joint clothed with greyish pubescence; first joint equal to prothorax and much longer than either third or fourth, second longer than third. Fore-femora with the two sub-apical spines well developed. Length, 8 lines. *Loc.*: Rigi District (A. C. English).

NOTE.—The solitary example from which the above characters are derived, does not appear to correspond with the definition of any species hitherto described.

#### FAM. COREIDÆ.

##### *Sub-fam. Coreinæ.*

50. *Mictis profana*, Fabr. S.R. p. 211, 33 (1803). *Loc.*: St. Joseph River (A. C. English); South Cape (T. H. Richards); Rigi District (A. C. English); Kiwai, Fly River; Fergusson Island (A. C. English); Laloki River; Toko, Fairfax Harbour.

NOTE.—The New Guinea insects are identical in appearance with those from Queensland, which the writer has been wont to regard as *M. profana*, Fabr. However, none of the Queensland or New Guinea examples have, in the male sex, the "*tibiis posticis pone dentem simplicibus*" (Stal), there being a number of small, narrow, blunt teeth in this situation. In some of the South Cape examples, and in the two specimens from Laloki River, the luteous marking of the corium of the hemelytra is confined to a narrow line adjoining the base of the membrane.

51. *Pternistria macromera*, Guér. Voy. Coq. Zool. 2, 2, p. 176 (1830). *Loc.*: Toko, Fairfax Harbour; Taputa, Chad's Bay.

NOTE.—Apparently identical with examples of *Pternistria* from Cape York, but females only are available from the latter locality for comparison.

52. *Mycillus explicatus*, Distant. Trans. Ent. Soc. Lond. 1888, 4, p. 481, pl. xiii. fig. 11. *Loc.*: St. Aignan, 5-7-91 (male); Cloudy Bay (female); Laloki River (male and female).

NOTE.—The examples from the Laloki River differ from the type in being of smaller dimensions. Moreover, one cannot be quite certain that the specimens from the two first-mentioned localities are correctly referable to the same species. In the figure illustrating W. L. Distant's description a stout tooth appears at the external base of the posterior tibiae. This is evidently an embodiment of the artist's idea of the fitness of things. *Mycillus*, it is submitted, will ultimately be included in *Pternistria*.

53. *Priocnemicoris albithorax*, Boisd. Voy. Astr. Ent. 2, p. 635, pl. 11, fig. 13, 1835. *Loc.*: Fly River (Froggatt).

54. *Priocnemicoris*, sp. *Loc.*: Laloki and Cloudy Bay.

NOTE.—This second species of *Priocnemicoris* is represented by two males only. In it the brilliant metallic green, which *P. albithorax* exhibits upon the upper surface, gives place to purple blue reflections, an æneous glimmer only appearing upon the scutellum.

55. *Brachylybas* (?), sp. *Loc.*: St. Joseph River (A. C. English).

56. *Sciophyrus inermis*, Stal. A. S. E. Fr. (4) v. 184. *Loc.*: Toko, Fairfax Harbour; Milne Bay (C. Hedley); St. Joseph River (A. C. English); Rigi (A. C. English).

NOTE.—The above insect may prove to be the *Lybas fascipes* of Walker; if the latter—as is suspected—be a *Sciophyrus*, and have in the female the sixth ventral segment entire.

57. *Leptoglossus membranaceus*, Fabr. Spec. 2, p. 351, 79 (1781). *Loc.*: Toko, Fairfax Harbour.

NOTE.—The specimens from the above locality agree with examples of *L. membranaceus* from North-east Queensland (Cairns, Cardwell, Johnstone River). It is probable that Montrouzier's *Anisoscelis bidentatus* will prove to be but a local variety of this widely ranging species.

58. *Amorbus robustus*, Mayr. Verh. z. b. Ges. Wien, 15, p. 432 (1865). *Loc.*: Fergusson Island (A. C. English).

59. *Cletomorpha alternata*, Dallas. List. Hem. p. 495 (1852). *Loc.*: St. Joseph River (A. C. English).

NOTE.—In addition to the above-mentioned members of this sub-family there are, occurring amongst the St. Joseph River *Hemiptera*, two other species which are also included in it. Their systematic position cannot, however, at present be further elucidated.

#### *Sub-fam. Alydina.*

60. *Riptortus annulicornis*, Guér. Voy. Coq. Ins. p. 177, pl. 12, fig. 11 (1830). *Loc.*: South Cape (T. H. Richards); Rigi District (A. C. English); Fairfax Harbour; Cloudy Bay; and Chad's Bay.

NOTE.—Single specimens occur from each of the last-mentioned localities. These may represent a distinct species.

61. *Noliphus papuensis*, Stal. Ann. S. E. Fr. (4) v. p. 185, i. (1865). *Loc.*: British New Guinea (C. Hedley).

62. *Marcus generosus*, Stal. *Loc.*: St. Joseph River (A. C. English); Taputa, Chad's Bay.

NOTE.—Identical with examples of this species obtained at Cairns, North-east Queensland.

#### *Sub-fam. Corizina.*

63. *Serinetha (abdominalis)*, Fabr. *Loc.*: Toko, Fairfax Harbour.

NOTE.—The insects from the above locality represent a species of large dimensions (males 6 lines and females 7 to 7½ lines in length), and enter the section of the genus which Dr. Stal has formed for the inclusion of the above species alone (*vid.* Kong. Sv. Vet-Ak., Handb. ii., 2, p. 995 (1872)). W. L. Distant has recorded *S. fascicollis*, Walk., from the Port Moresby District (*vid.* Trans. Ent. Soc. Lond., 1888, p. 482).

#### FAM. ARADIDÆ.

64. *Brachyrhynchus*, sp. Four examples included in the small section of the genus which contains *B. membranaceus* and *B. orientalis*; but the means for the precise determination of the species represented are not yet to hand. *Loc.*: East Cape (C. Hedley); Normanby Island.

#### FAM. REDUVIIDÆ.

65. *Helonotus sexspinosus*, Fabr.; var. *a*, Stal. Kongl. sv. Vet. Akad. Handl. Bd. 12, No. 1, p. 16 (1874). *Loc.*: St. Joseph River (A. C. English).

66. *Pristhesanchus dorycus*, Boisd. Voy. Astrol. Ins. 2, p. 644, 2, pl. ii., fig. 22 (1835). *Loc.*: St. Joseph River (A. C. English).

NOTE.—The four examples referred to this species illustrate its variable nature, already alluded to by Stål (*op. cit.*, p. 17.) In the case of one of two female insects, the thorax and post-ocular portion of the head are pale chestnut. In that of two males, the same colour prevails in these regions, and also at the apex of the corium; but the head (including the rostrum) anterior to the insertion of the antennæ, the tubercles on the fore-lobe of the pronotum, and the venter are yellowish-white. Possibly, however, the latter two insects represent a distinct species. They measure but 15 mm. in length.

67. *Euagoras dorycus*, Boisd. Voy. Astr. Ins. 2, p. 645, pl. ii., fig. 21 (1835). *Loc.*: St. Joseph River (A. C. English); Milne Bay (C. Hedley); St. Aignan (5-7-1891); Taputa, Chad's Bay; and Roko.

NOTE.—The New Guinea representatives of this species agree in every particular with examples from Cairns, North-east Queensland.

68. *Polydidus armatissimus*, Stal. O.V.A.F., 1859, p. 376, i. *Loc.*: Fergusson Island (A. C. English).

NOTE.—Stal records the occurrence of this insect in the Philippine Islands, in China, and Ceylon. The Queensland Museum possesses an example also from Herberton, North-east Queensland.

69. *Velitra marginata*, Signoret. Ann. del. Mus. Civ. di. St. Nat. vol. xv. 1880, p. 544. *Loc.*: St. Joseph River (A. C. English); Laloki River; Fairfax Harbour.

70. *Sastrapada novæguinensis*, sp. nov. *Female*: Allied to the common Queensland species, *S. australica*, Stal; but thus distinguished therefrom. *S. novæguinensis* is relatively narrower, with more elongated legs; the prothorax is much longer; the postero-lateral angles support sharp-pointed tubercles; there are small teeth present on that portion of the outer wall of each fore acetabulum which extends as ridge to the hinder margin of the prostethium; there are three or four ill-defined light fuscous vittæ along the sides of the head and thorax, instead of the single fuscous vitta along each side of the prostethium. The two sub-contiguous vittæ on the venter are also replaced by centrally-situated spots, one on the anterior border of each segment. Length,  $7\frac{1}{2}$  lines; breadth, 1 line. *Loc.*: Fergusson Island (A. C. English).

#### FAM. HYDROBATIDÆ.

71. *Gerris*, sp. *Loc.*: St. Joseph River (A. C. English).

NOTE.—A single specimen, with the colouration very similar to that of *Gerris* (*Tenagogonus*) *fluviorum*, Fabr., but presenting larger dimensions—being eight lines in length.

#### FAM. NAUCORIDÆ.

72. *Belostoma indica*, St. Fargeau, *et cæt.* Enc. X., 272, &c. *Loc.*: St. Joseph River (A. C. English); Fergusson Island (A. C. English).

73. *Diplonychus rusticus*, Stoll. Pun. 36, pl. 7, fig. 6, &c. *Loc.*: St. Joseph River (A. C. English).

## FAM. NEPIDÆ.

74. *Nepa tristis*, Stal. Ofv. K. V. Ak. Forh., xi., 241. *Loc.*: St. Joseph River (A. C. English). The single specimen from the above locality is very similar to the common species of Queensland, which has been also referred to *N. tristis*. In the New Guinea insect, however, the sides of the abdomen are unusually convex, giving this part of the body a widened appearance.

75. *Ranatra varipes*, Stal. Ofv. K. V. Ak. Forh., xviii., 203. *Loc.*: St. Joseph River (A. C. English).

NOTE.—Stal records the species as occurring in Java.

76. *Ranatra fliformis*, Fabr. *Loc.*: St. Joseph River (A. C. English).

NOTE.—Not to be distinguished from Queensland examples of this species.

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N.B.—(1.) The types of the new species repose in the Insect Department of the Queensland Museum. (2.) When received nearly all the specimens had been long immersed in spirits of wine, and this had exerted its usual effects upon fugacious colours. (3.) The line is regarded as the equivalent of two millimetres.



138761

# ANNALS

OF THE

## QUEENSLAND MUSEUM.

No. 3.

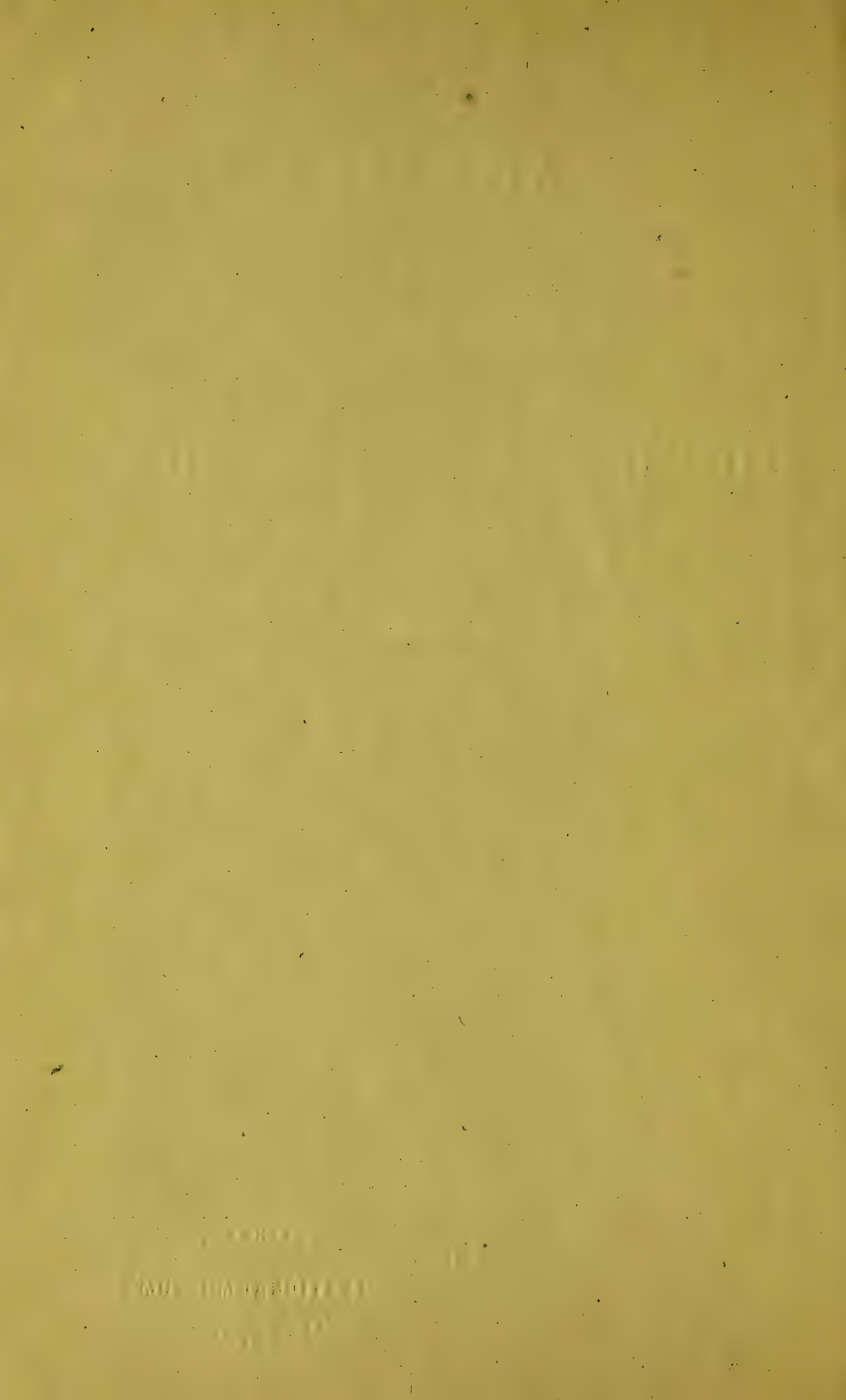


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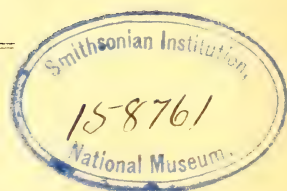
1897.





ANNALS  
OF THE  
QUEENSLAND MUSEUM.

No. 3.



BRISBANE:  
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1897.



# THE EXTINCT FRESH-WATER TURTLES OF QUEENSLAND.

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A preliminary notice of these reptiles under the title of "The Lesser Chelonians of the Nototherian Drifts," was submitted by the writer to the Royal Society of Queensland at its meeting on the 22nd September, 1894, and published by the Society in vol. 10 (pp. 123-127) of its Proceedings. In that paper attention was drawn to the presence in the Darling Downs deposits of abundant fragments of turtle shells, indicating apparently the past existence of more than one species, and to the inclusion among them of traces of a Mud-turtle, for which the name *Trionyx australiensis* was proposed. A hope was at the same time expressed that a study of these commingled shards of former life might yield us some idea, however vague and imperfect, of the characteristics of the reptiles of which they were once constituents. After a long series of delays caused by untoward circumstances, chief among them being scanty leisure for work of the kind, an opportunity of renewing the subject occurs and use is made of it.

The bulk of the fragments is found to consist of the relics of a few species belonging to the genera *Chelymys* and *Chelodina*, the Chelonian forms still prevalent in our inland waters; one species which is numerously represented is foreign to any genus known to the writer.

The remnants can, with sufficient confidence, be referred to the several species discriminated by their means, but a reproduction of the form of the carapaces and plastrons, which has in some instances been attempted by reducing fragments of various size to common proportions and placing them as nearly as possible in their proper positions, is, of course, very liable to error.

I have to thank my friend, Mr. R. Etheridge, for the opportunity of identifying the fossils mentioned as occurring at the Warburton River.

The following species are recognisable:—

FAM. CHELYDIDÆ.

*Gen. Chelymys.*

CHELYMYS UBERRIMA, n.s.—It is from this species that by far the greater number of the remains before us have been derived. Its generic identity is indicated by the presence of the superficial markings familiar to us in the living species of *Chelymys*, by the impressions of nuchal and interjugal shields, and by the sides of the pygal plate being quite uncovered by the last costal shields. The species is distinguished by the peculiar feebleness of its markings, by the general form and proportions of its parts, and by its comparative size. It is founded primarily on the only example of some few plates in their natural connection, which have occurred among the whole of the turtle remains, to show the precise form of the part whence they came: in this case the anterior region of the carapace (Plate 1, Fig. A). The second and third peripheral plates are extended outwards to a greater degree than in the living species; the peripheral surfaces become more



convex and the edges thicker as they recede, producing an obvious contrast with the opposite conditions in the recent *Chelymys*. The first vertebral shield is narrower in proportion to its length, its hinder edge is straighter, and its form different in other respects. The surface pattern beneath the marginal shields is much as in *C. macquaria*, a plexus of fine branching and interosculating lines, but beneath the costal and vertebral shields the longitudinal markings are delicate raised lines or fine striæ, frequently imperceptible in certain lights, but almost always sufficiently in evidence for determinative purposes. The centre of the space beneath the first vertebral shield is convex, but from this convexity caudad the surface subsides into a broad shallow depression. The rest of the plates entering into the composition of the carapace as restored being shown in position on Plate I, it is unnecessary to describe them separately. Assuming the figure to be moderately true to nature, the carapace in this species had the form of a short oblong, a little contracted anteriorly, with lateral margins which are broad, convex, and nonrevolute as far as the ninth peripheral, then increasing slowly in breadth and becoming a little concave on the upper surface as far as the uropygial plate which is gently convex in the centre. The arch of the carapace seems to have been moderately elevated; its crown a little depressed in the course of the vertebral line. The constituent species of the plastron (Plate II.) have been recognised by the similarity of their surface markings with those of the peripheral plates of the carapace, and the identification has been confirmed by the fact that the fragments of the two present themselves in a similar numerical superiority over all others. The average size of the species at maturity was, in linear measurement, about twice that of *C. macquaria*. *Loc.*: Darling Downs, passim.

CHELYMYS ANTIQUA, n.s.—A species of so infrequent occurrence that it is represented by four fragments only, a lophial and first pleural from young individuals, a first and one of the hinder pleurals from older carapaces. The hinder half of the lophial (Plate III., Fig. A) is strongly elevated, its lateral angles depressed. The nuchal shield is oblong, with diameters 8:6·5; it is much shorter than the adjacent marginals, yet protrudes a little beyond them, consequently the front edge of the first vertebral in contact with it is thrust forward between the first marginals to a much greater extent than in the recent species. The anterior edge of the first marginal slopes caudad, not, as in *C. macquaria*, cephalad. The convex portion of the plate is rather obscurely ribbed with longitudinal raised lines, the remainder of it bears only a few very irregular and almost obsolete ridges. The first pleural plate (Plate III., Fig. B) shows on its surface the groove between the first vertebral and first costal shields and parts of those bounding the second marginal and second vertebral; the first of these shows that the first vertebral shield in this species had a straight lateral edge and a sharp posterior angle, and that the angularity of the edge of the second marginal was much greater than in *C. macquaria*. The surface markings on this plate differ from those of the living species only in being more delicate. A portion of a similar plate from an apparently mature individual (Plate III., Fig. C) has the same straight groove as the preceding and superficial lineations no coarser than in it. An abraded fragment from the upper (vertebral shield) end of one of the

posterior pleural plates (Plate III., Fig. D) has longitudinal lines of like character. So far as we can learn from these examples of the species it seems to have been about equal in size with *Chelodina oblonga*. Loc.: Darling Downs.

CHELYMYS ARATA, n.s.—This species, which is well distinguished by the coarse ridge-and-furrow-like sculpture of its carapace, and the transverse direction of the ridges beneath the hinder part of the first vertebral shield, is almost as infrequent as the preceding. It is exemplified by three pleural and one pygal plate from the Darling Downs, and by two pleural plates from the Warburton River. The pleural plate, probably the fourth of the left side, figured on Plate IV., Fig. B, shows the characteristic sculpture almost in its pristine strength; the rounded ridges equal to or greater than the deep furrows in breadth are seldom continuous, generally interrupted or by interosculation form loops and branches; those on the upper or vertebral portion ascending obliquely, those beneath the costal shields descending. The younger bone, the fifth pleural plate apparently of the same side (Plate IV., Fig. C) has the same style of ornamental ribbing, but as in the subject of Fig. D, a still younger plate from the opposite side, the ribs on the part beneath the hinder portion of the vertebral shield are broken up into irregular tubercules not clearly marked in the drawing. The first pleural, one of the two Warburton River fossils, figured on the same Plate IV., Fig. A, shows that on the hinder portion of the first vertebral shield the ridges, formed probably by coalescence of the tubercules above mentioned, took a transverse direct direction, those on the costal part of the plate a strongly oblique direction upwards. To this species is referred the broadly pentagonal, radiately furrowed pygal plate represented by Fig. E, Plate IV. It is evidently from a *Chelymys*, and more probably from this species than any other pygal in the collection. The second pleural from the Warburton River (Fig. F, Plate IV.) is a fragment of the fourth of the left side much abraded. In size *C. arata* appears not to have been larger than the recent *C. macquaria*.

*Gen. Chelodina.*

CHELODINA INSCULPTA, n.s.—A species which is at present distinguished chiefly by the extreme degree to which the typical sculpture of the genus is developed by it. The inner surface of the first pleural (Plate V., Fig. A) shows that the curved pier sent up by the brachiosternal for the support of the carapace extended inwards towards the vertebræ as far as it does in *C. oblonga*, but was more forward in position, and further, that the convex surface for the reception of the pier was continuous with that of the process for the attachment of the vertebral centra, which is not the case in *C. oblonga*; but the position of the pier, and consequently the longitudinal extent of the anterior opening of the test, appears to have been liable to considerable variation, for in the subject of Plate V., Fig. B, a second pleural of the same side, with attachment to the succeeding vertebræ, the pier was inserted on the posterior side of the second rib instead of that of the first. The specific character of the surface graving apparent in its peculiar strength and regularity is well seen in this example. On the vertebral portion of the plate each edge presents a row of long folds or bars while the middle is covered

with a broad band of scale-like folds, which on the costal portion is divided into two by an intercostal groove; the pattern produced on either side of the groove reminds one of a moiety of the skin from the belly of a snake with ventral scutes. Of a third pleural plate a portion is represented by Fig. B, Plate V. This plate being entirely covered by the overlying costal shield, of course, bears upon it no dermal groove. The nearly entire fourth pleural (Plate V., Fig. C) shows in a well-preserved state a slight modification of the surface pattern; the band of scales on either side the groove is wider, and the lateral bands of bar-like folds narrower than in the other fragments referred to the species. At the distal end the sculpture takes the character of long ascending tongues; these are seen again on the distal end of a sixth pleural (Plate V., Fig. D.) The finely-preserved ninth peripheral plate of Plate V., Fig. G, illustrates the pronounced character of the sculpture in this part of the carapace; above the submarginal groove it ascends in bold flame-like tongues, below it reproduces the general pattern of the pleural plates. On peripheral plates that have suffered much from abrasion of the surface the flame-like elevations are reduced to long pointed bract-like etchings. It is with some confidence that the pygal plate seen on Plate V., Fig. H, is thought to pertain to the present turtle, as there are on its distal margin distinct indications, not clearly marked by the artist, of the elongated ridges borne by the distal ends of the pleural plates. In a fragment of a similar plate from the Warburton River all the superficial tubercles are more elongate in form than the generality of those on the entire plate figured. On Plate V. an attempt has been made to reproduce the form of this carapace as nearly as the paucity of material allows, but it must be confessed that all that can be positively said of it is that its lateral edges were moderately broad and revolute (cf. Plate VI., Fig. C.) In addition to the fragments of carapace figured, sixteen others from the Darling Downs and seven from the Warburton River affirm the validity of the species, but do not greatly add to knowledge of it. *Plastron*: In the living species of *Chelodina*, the sutures between the posterior divisions of the plastron pass each through a band of elongate etchings as in contiguous pleural plates. By virtue of this as an almost generic condition and an unusually strong development of superficial graving as a specific, we may reasonably attribute to the plastron of *C. insculpta* the naturally associated mero- and sacro-sternal given on Plate VI. The two other plates included in the conjectural restoration of the plastron on Plate VI. are all the remains of this region of the test which have as yet been met with. *Loc.*: Darling Downs; Eight-mile Plains, near Brisbane; Warburton River.

**PELOCOMASTES\*** (gen. nov.)—Test smooth; no nuchal shield; dermal grooves coarse and irregular; plastron short, broad, depressed; interjugal shields transversely divided, its anterior division marginal; sacro-sternal notch moderate.

**PELOCOMASTES AMPLA**, n.s.—Remains of the test of this species are easily recognised by the absence of any, or at least of any definite, kind of ornamentation on their surfaces and by the peculiar uncouthness of their broad deep grooves, which run in curved, often rugged, lines and meet in rounded angles.

\* Mud-reveller.



*Carapace*:—An imperfect lophial plate with part of a first peripheral, not figured, is unfortunately not of sufficient extent to show conclusively either the presence or the absence of a nuchal shield, but as the latter seems to be the more probable, it is assumed to be the case in the representation of the fore part of the carapace given on Plate VII. The surface of the anterior peripherals figured shows no system of marking whatever, though something of the kind has been introduced in Fig. A of Plate VII., but in a first right peripheral not figured the surface is obscurely diversified by shallow groovings which here and there form angular loops; like many other fragments of the test of this species, the present one has a glazed semiporellanous appearance. In a first left peripheral from a young animal the surface is shallowly but plainly impressed with loop-like groovings. Probably in still younger stages of growth these markings were yet more distinct and general. One of the lateral peripheral plates of the same side, probably the eighth, is rendered half natural size in Fig. D, Plate VII.; its dimensions show that for a freshwater turtle the species attained to a large size, and the thickness of the plate (30mm. at its anterior edge) indicates that the test was unusually strong. The first pleural of the left side (Plate VII., Fig. C), viewed on its inner aspect, has the vertebral process and the convexity for the reception of the brachioisternal pier forming an uninterrupted curved ridge which separates a deep and continuous fossa behind it from the more level surface in front. *Plastron*: Plate VII., Fig. B, is a half-sized figure of the left brachioisternal minus its ascending pier; it shows a flat plastron passing with a very low arch into the carapace. The surface of this plastron is entirely devoid of ornamental markings. The subject of Fig. B, Plate VIII., indicates a breadth of 290mm. for the whole plastron, but as its thickness is less than half that of the subject of Fig. C, we may fairly estimate the full breadth of this turtle at two English feet. The number of the pieces of plastron and carapace derived from this turtle exceeds that left by any of its contemporaries except *Chelodina uberrima*. *Loc.*: Darling Downs.

Besides the turtles which have left sufficient remains for their specific determination, others were certainly in existence: There is, for example, in evidence a pleural plate ornamented after the manner of a *Trionyx*, but having the rib entirely sunk beneath the inner surface. There is, again, a pygal plate with a very peculiar rippling style of ornament; but isolated traces such as these it is useless to describe further since their utmost value to history can only be for the present *gen. et sp. ind.*

It may be observed that the large amount of material examined for the purposes of these notes has not supplied any ground for suspecting that any existing species was coeval with the forms now disclosed from the Darling Downs. The Chelonian division of the fauna accords with the others in declaring that since its remains were buried a total change has swept over the vertebral life of Australia.

C. W. DE VIS,  
Curator.

14th April, 1897.

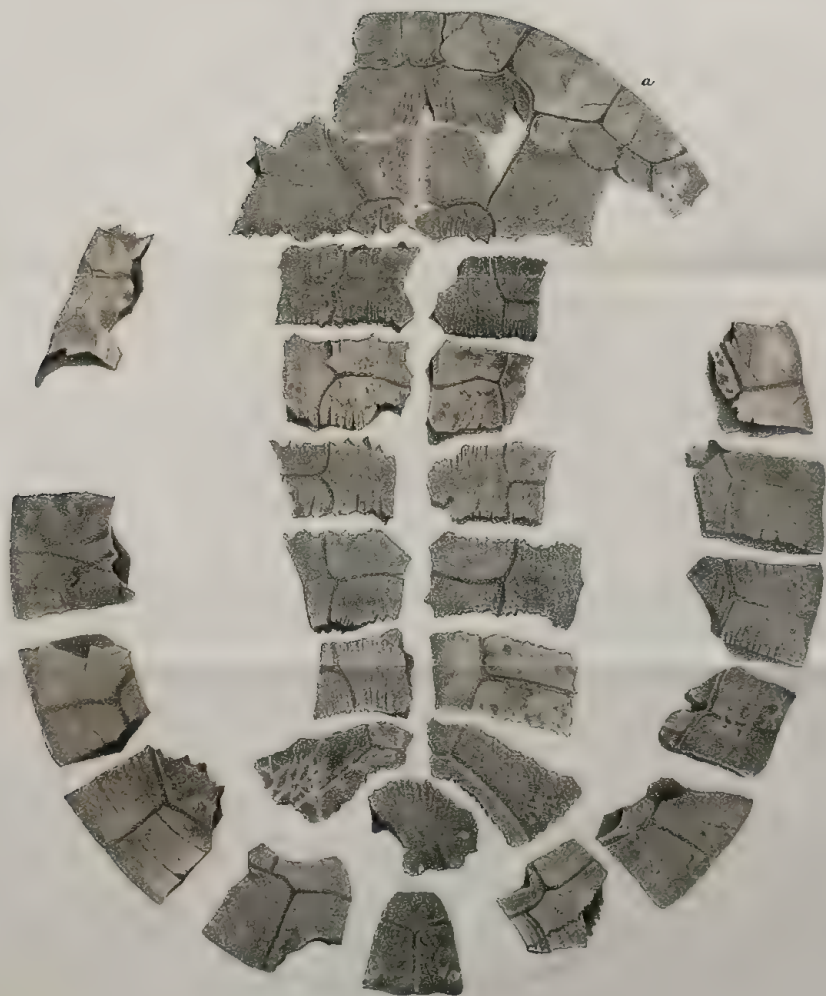






*CHELYMYS UBERRIMA*  
*CARAPACE*





*CHELYMYS UBERRIMA*  
CARAPACE

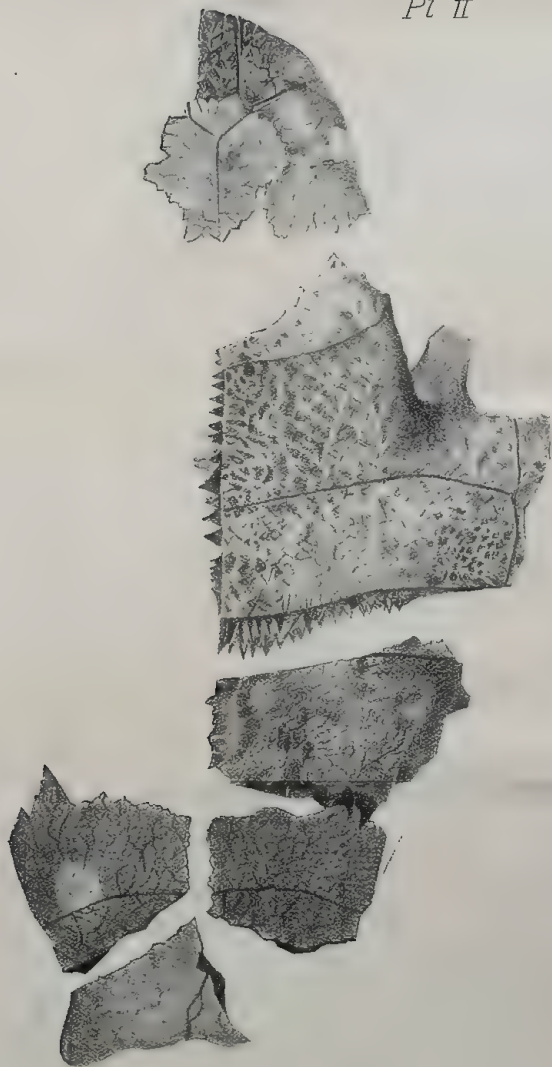




*CHELYMYS UBERRIMA*  
*PLASTRON*

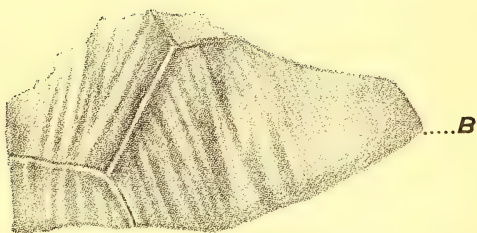
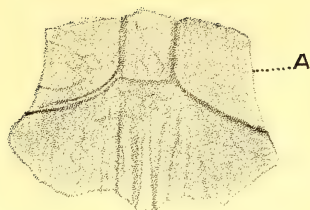






*CHELYMYS UBERRIMA*  
*PLASTRON*

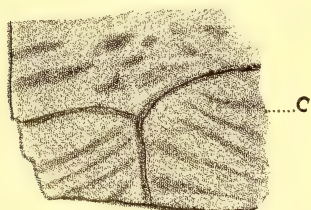
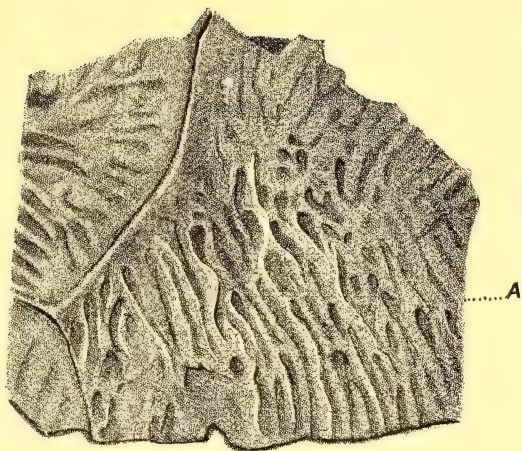




CHELYMYS ANTIQUA



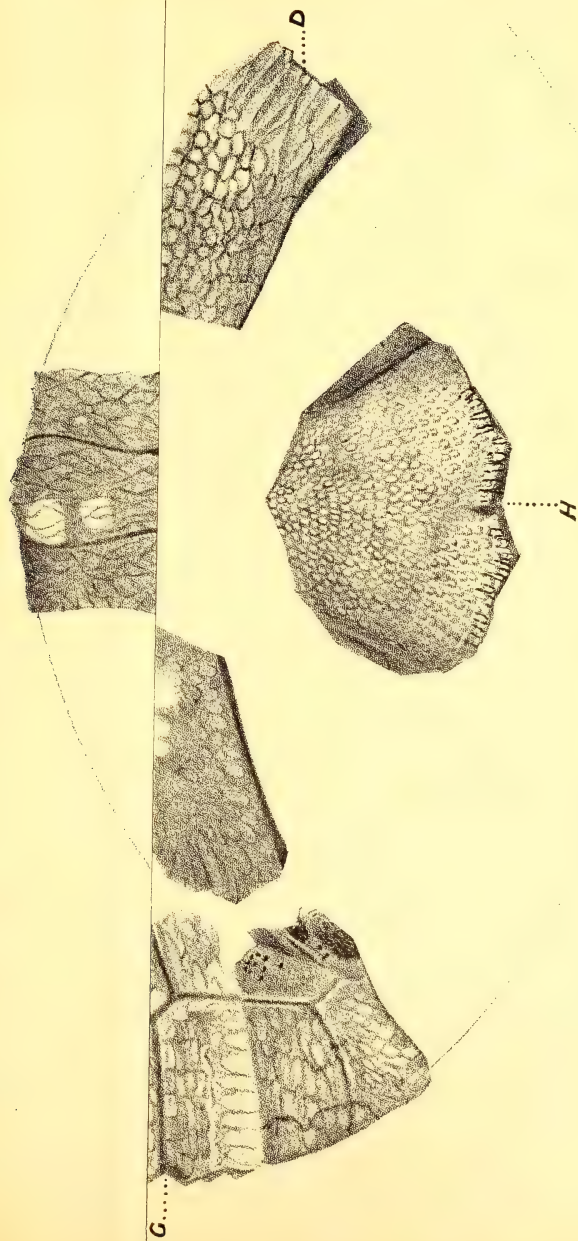




CHELYMYS ARATA

Carapace





*CHELODINA INSCULPTA*  
CARAPACE

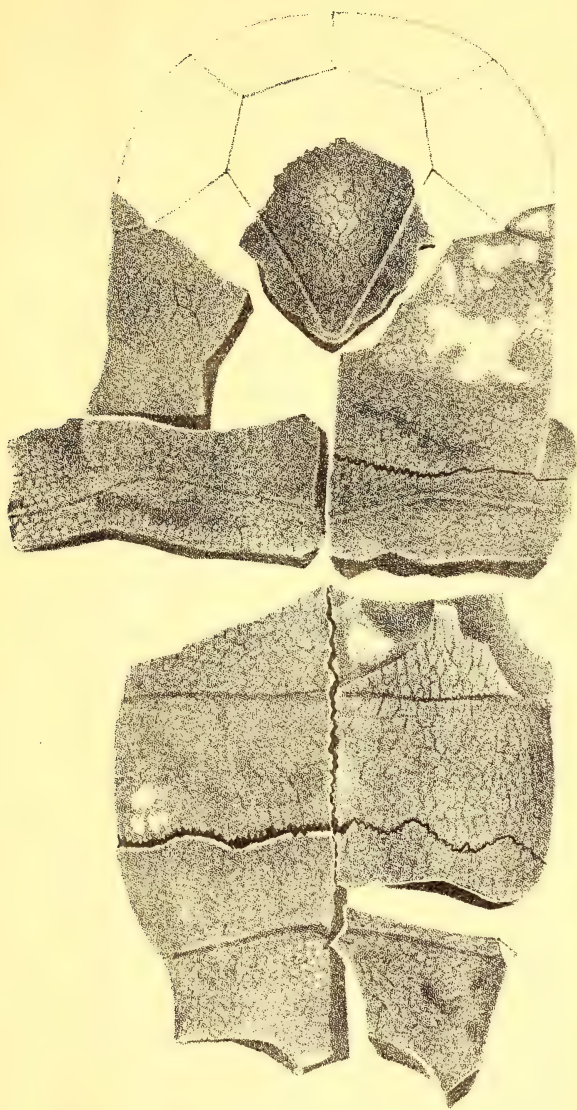




*CHELODINA INSCULPTA*  
CARAPACE







CHELODINA INSCULPTA

Plastron

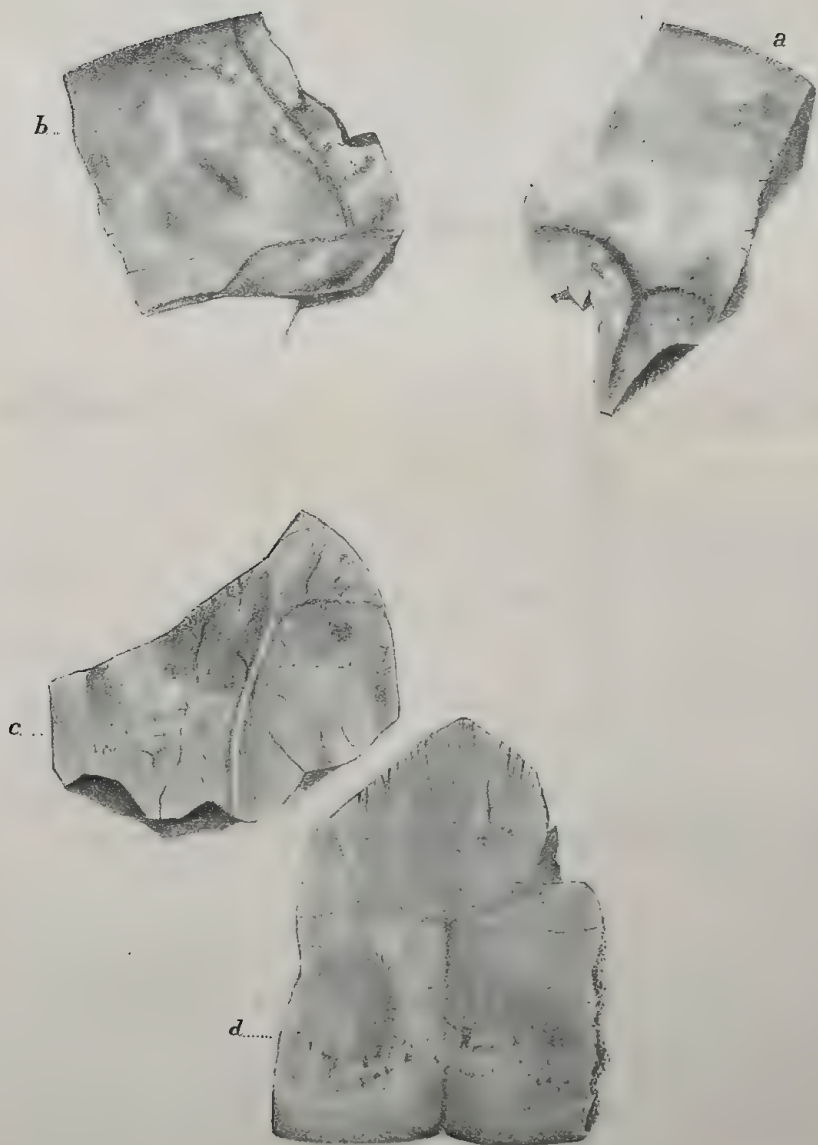




**PELOCOMASTES AMPLA**  
Front of Carapace & 8<sup>th</sup> right peripheral

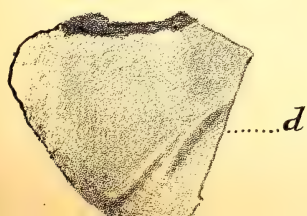
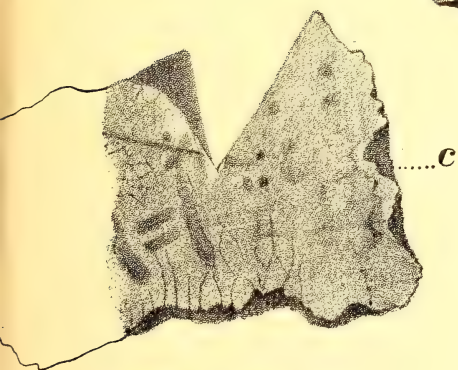
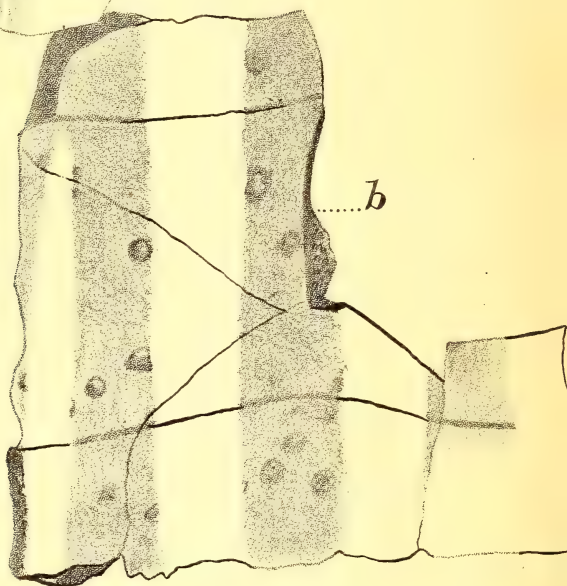
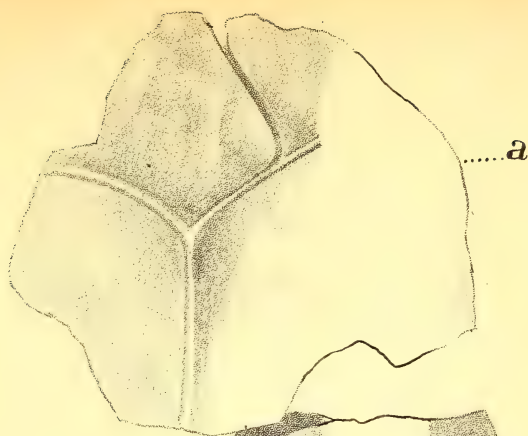






PELOCOMASTES AMPLA  
Front of Carapace & 8<sup>th</sup> right peripheral





PELOCOMASTES AMPLA

Plastron



150479

# ANNALS

OF THE

## QUEENSLAND MUSEUM.

No. 4.

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THE XYLORYCTIDÆ OF QUEENSLAND,

BY

DR. A. J. TURNER.

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BRISBANE:

EDMUND GREGORY, GOVERNMENT PRINTER, WILLIAM STREET.

1897.





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# ANNALS

OF THE

## QUEENSLAND MUSEUM.

No. 4.

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THE XYLORYCTIDÆ OF QUEENSLAND,

BY

DR. A. J. TURNER.

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BRISBANE:

EDMUND GREGORY, GOVERNMENT PRINTER, WILLIAM STREET.

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## THE XYLORYCTIDÆ OF QUEENSLAND.

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THE family Xyloryctidæ was instituted by Mr. E. Meyrick, B.A., F.E.S., to receive a large and important section of the *Tineina*. His monograph, published in the transactions of the Royal Society of South Australia, 1890, page 23, laid the foundation of all our knowledge of this group, which he defines as follows:—

“Head smooth or with more or less loosely appressed hairs; ocelli absent; tongue developed. Antennæ  $\frac{3}{4}$ — $\frac{5}{4}$ ; in male pectinated, ciliated, or simple, basal joint without pecten. Labial palpi recurved, terminal joint pointed. Maxillary palpi very short, more or less appressed to tongue. Abdomen in male with uncus developed, variable in length. Forewings with vein 1 furcate towards base, 7 and 8 stalked or rarely separate or coincident, 11 from middle of cell. Hindwings as broad or generally broader than forewings, trapezoidal to ovate, 1 b clothed with long hairs above towards base, shortly furcate at base, 3 and 4 from a point or stalked, 6 and 7 stalked or approximated towards base, 8 connected with upper margin of cell by a short bar.”

The family is most nearly related to the Oecophoridæ, and many species of both families present such a close general resemblance that care is necessary to avoid confusing them. This can always be done by observing the neuration of the hindwings, and there are also usually other points of distinction which are however not quite absolute. For the classification of the genera we are indebted to Meyrick's paper quoted above, which will be repeatedly referred to in the following pages. In the few instances in which I have ventured to differ from Mr. Meyrick it has been in the endeavour to apply his methods to the more ample material at my disposal.

A number of species have been more recently described by Dr. T. P. Lucas, of Brisbane, and by Mr. Oswald Lower, of South Australia. Of these, I have noticed all those of the former author, having had the good fortune to obtain access in all but one instance to the original types. Those of Lower's species which occur in Queensland are also referred to.

This paper owes its value mainly to the splendid collection placed at my disposal by Mr. R. Illidge, whose assiduous labours in the discovery and rearing of the larvæ have resulted in a rich harvest of specimens of new or previously little known species. Mr. F. P. Dodd has obtained a small but highly interesting collection of specimens reared from larvæ found in the neighbourhood of Charters Towers; these are now in Mr. Illidge's collection. Our previous knowledge of this family in Queensland was mainly due to specimens obtained by the late Mr. G. Barnard, of Duinga.

There yet remain however many new species, more particularly of the less conspicuous genera, to be discovered in the locality of Brisbane; and our knowledge of those in the more distant parts of the colony is still extremely fragmentary.

The following tabulation includes those of Meyrick's genera, which are not at present known in Queensland. These are distinguished by a \*; the remainder are numbered in the order in which they follow in the present paper:—

|   |                                 |
|---|---------------------------------|
| 1. Forewings with 11 veins (7 and 8 coincident)                     | 2.                              |
| "                  12 " ... ..                                      | 3.                              |
| 2. Hindwings with 6 and 7 from a point                              | <i>Hypertricha</i> .*           |
| "                  " separate ...                                   | 15 <i>Catoryctis</i> (in part). |
| 3. Forewings with 7 and 8 separate ...                              | 22 <i>Agriophara</i> .          |
| "                  " stalked ...                                    | 4.                              |
| 4. Forewings with 3 and 4 stalked ...                               | 21 <i>Phylomictis</i> .         |
| "                  " separate ...                                   | 5.                              |
| 5. Forewings with vein 8 to hindmargin                              | 6.                              |
| "                  " apex or costa                                  | 7.                              |
| 6. Hindwings with 6 and 7 separate ...                              | 12 <i>Neodrepta</i> .           |
| "                  " stalked ...                                    | 13 <i>Paralecta</i> .           |
| 7. Antennæ of male pectinated ...                                   | 1 <i>Cryptophaga</i> .          |
| "                  not pectinated ...                               | 8.                              |
| 8. Hindwings with 6 and 7 separate ...                              | 9.                              |
| "                  " from a point or stalked                        | 15.                             |
| 9. Antennæ of male ciliated ... ..                                  | 10.                             |
| "                  simple ... ..                                    | 14.                             |
| 10. Thorax crested ... ..   | 11.                             |
| "                  smooth ... ..                                    | 12.                             |
| 11. Palpi very long, terminal joint as long as second ... ..        | <i>Notosara</i> .*              |
| Palpi moderate, terminal joint shorter than second ... ..           | 7 <i>Arignota</i> .             |
| 12. Hindwings in male with long costal hair-pencil from base ... .. | 6 <i>Crypsicharis</i> .         |
| Hindwings in male without costal hair-pencil ... ..                 | 13.                             |
| 13. Palpi with terminal joint longer than second ... ..             | <i>Phthonerodes</i> .*          |
| Palpi with terminal joint not longer than second ... ..             | 5 <i>Lichenaula</i> .           |
| 14. Forewings with vein 7 to hindmargin                             | 16 <i>Illidgea</i> .            |
| "                  " apex ...                                       | 15 <i>Catoryctis</i> (in part). |
| "                  " costa ...                                      | 18 <i>Gonioma</i> .             |
| 15. Antennæ in male ciliated ... ..                                 | 16.                             |
| "                  simple ... ..                                    | 23.                             |
| 16. Forewings with vein 7 to costa ...                              | 14 <i>Scieropepla</i> .         |
| "                  " apex ...                                       | 17.                             |
| "                  " hindmargin                                     | 21.                             |
| 17. Abdomen stout, with dense projecting hairs... ..                | 8 <i>Maroga</i> .               |
| "                  moderate, without dense projecting hairs ... ..  | 18.                             |

- |   |     |                       |
|---|-----|-----------------------|
| 18. Anterior tibiæ and tarsi much dilated,<br>with scales ... ..        | 9   | <i>Compsotorna</i> .  |
| Anterior tibiæ and tarsi normal ...                                     | 19. |                       |
| 19. Antennal ciliations of male, 1 ...                                  |     | <i>Clerarcha</i> .*   |
| "                    " $\frac{1}{4}$ - $\frac{1}{2}$ ...                | 20. |                       |
| 20. Hindwings with 6 and 7 from a point,<br>inner margin hairy ... ..   | 11  | <i>Plectophila</i> .  |
| Hindwings, 6 and 7 stalked, inner<br>margin not hairy ... ..            |     | <i>Chalarotona</i> .* |
| 21. Thorax crested ... ..   | 3   | <i>Tymbophora</i> .   |
| " smooth ... ..   | 22. |                       |
| 22. Antennal ciliations of male, 5 ...                                  | 4   | <i>Hylypnæ</i> .      |
| "                    " $\frac{1}{4}$ -2 ...                             | 2   | <i>Xylorycta</i> .    |
| 23. Hindwings in male with very long<br>costal hairs towards base... .. | 20  | <i>Procometis</i> .   |
| Hindwings without long costal hairs                                     | 24. |                       |
| 24. Antennæ of male much thickened<br>with scales towards base ... ..   | 17  | <i>Mylocera</i> .     |
| Antennæ not thickened ... ..  | 25. |                       |
| 25. Posterior tibiæ in male smooth-scaled                               | 19  | <i>Uzucha</i> .       |
| "                    "                    rough-haired...               | 10  | <i>Phlæophorba</i> .  |

### 1. CRYPTOPHAGA, Lw.

This is the best-known genus of the family. The perfect insects are large, and for the most part conspicuous, but are rarely met with. They may, however, be reared in abundance from the larvæ, as has been done with conspicuous success by Mr. R. Illidge. The increased material so obtained has enabled me to remove from the genus *epigramma*, Meyr, *porphyrinella*, Walk., and *cephalochra*, Lower, of which species only the females were previously known. For the first I have instituted the new genus *Illidgea*; the remainder are referred to *Xylorycta*.

The genus *Pilostibes*, Meyr., I have dropped, as in all the specimens I have examined veins 7 and 8 are stalked. I can only conjecture that Mr. Meyrick was misled by an abnormal specimen in which vein 7 happened to be absent. *P. enchidias*, Meyr., is included under the present genus; *P. stigmatias*, Meyr., under *Xylorycta*.

The following is a tabulation of the Queensland species:—

- |  |    |                        |
|--|----|------------------------|
| 1. Forewings with conspicuous longi-<br>tudinal fuscous streak ... ..  | 1  | <i>enchidias</i> .     |
| Forewings, without conspicuous longi-<br>tudinal fuscous streak ... .. | 2. |                        |
| 2. Forewings with well-defined posterior<br>(reniform) spot ... ..     | 3. |                        |
| Forewings without well-defined pos-<br>terior (reniform) spot ... ..   | 6. |                        |
| 3. Hindwings yellowish ... ..  | 4  | <i>platypedimela</i> . |
| " fuscous or grey ... ..   | 4. |                        |

- |  |     |     |                       |
|--|-----|-----|-----------------------|
| 4. Forewings at base clear white   | ... | 3   | <i>albicosta</i> .    |
| "                    " not white   | ... | 5.  |                       |
| 5. Forewings with a well-defined anterior spot   | ... | 5   | <i>nephrosema</i> .   |
| Forewings without a well-defined anterior spot   | ... | 2   | <i>irrorata</i> .     |
| 6. Forewings with a white streak along costa   | ... | 7.  |                       |
| " without white costal streak  | ... | 8.  |                       |
| 7. Forewings dark-grey   | ... | 6   | <i>stenoleuca</i> .   |
| " fuscous-red  | ... | 9   | <i>russata</i> .      |
| 8. Forewings reddish-brown or ferruginous  | ... | 9.  |                       |
| Forewings not reddish-brown  | ... | 10. |                       |
| 9. Hindwings pale ochreous   | ... | 10  | <i>phaëthontia</i> .  |
| " orange-ochreous  | ... | 11  | <i>rubescens</i> .    |
| 10. Forewings with 3 or 4 conspicuous dots in middle part of disc                        | ... | 11. |                       |
| Forewings without 3 or 4 conspicuous dots in middle part of disc                         | ... | 16. |                       |
| 11. With 4 discal dots, 4th on fold  | ... | 12. |                       |
| " only 3 discal dots   | ... | 13. |                       |
| 12. Hindwings uniformly fuscous in both sexes  | ... | 12  | <i>sarcinota</i> .    |
| Hindwings in male blackish, in female dark-fuscous with whitish apices                   | ... | 13  | <i>acroleuca</i> .    |
| 13. Forewings with hindmargin decidedly oblique  | ... | 14. |                       |
| Forewings with hindmargin but slightly oblique   | ... | 15. |                       |
| 14. Hindwings in male black, in female wholly or partly white                            | ... | 16  | <i>nigricincta</i> .  |
| Hindwings in male grey   | ... | 14  | <i>eumorpha</i> .     |
| 15. Forewings snow-white, with apex very obtusely rounded                                | ... | 18  | <i>pultenææ</i> .     |
| Forewings greyish, whitish irrorated with fuscous, rarely white, apex moderately rounded | ... | 19  | <i>nubila</i> (part). |
| 16. Forewings with yellow lines  | ... | 21  | <i>flavolineata</i> . |
| " without "  | ... | 17. |                       |
| 17. Forewings with coppery-purple hindmarginal band                                      | ... | 20  | <i>ecclesiastis</i> . |
| Forewings without coppery-purple hindmarginal band                                       | ... | 18. |                       |
| 18. Forewings with hindmargin sinuate  | ... | 22  | <i>spilonota</i> .    |
| " rounded  | ... | 19. |                       |
| 19. Hindwings with hindmarginal black dots   | ... | 20. |                       |
| Hindwings without hindmarginal black dots  | ... | 22. |                       |



20. Forewings with hindmargin decidedly oblique ... .. 15 *chionodes*.  
 Forewings with hindmargin but slightly oblique ... .. 21.  
 21. Forewings shining snow-white ... 17 *epadelpha*.  
 „ greyish or whitish or irrorated with fuscous, rarely white 19 *nubila* (part).  
 22. Forewings grey, with 5 indistinct cloudy dark-grey dots arranged longitudinally ... .. 7 *stochastis*.  
 Forewings grey, with 3 conspicuous black dots arranged longitudinally 8 *tecta*.

1. CRYPTOPHAGA ENCHIDIAS, *Meyr.* (*Pilostibes enchidias*, Meyrick, Trans. Roy. Soc. S.A. 1890, 27.) Male, 30-32 mm.; antennal pectinations, 1-1½. Female, 39-42 mm.

Nudgee, near Brisbane: larvæ tunnel the stems of *Melaleuca nodosa* and *Callistemon salignus* dragging in leaves for food; moths emerge in November and December.

2. CRYPTOPHAGA IRRORATA, *Lw.* (*Cryptophasa irrorata*, Lewin, Ins. N. S. W.) Meyrick, 34. Antennal pectinations, 6-7, reaching their maximum in this species.

Brisbane: larvæ common on *Casuarina*.

3. CRYPTOPHAGA ALBICOSTA, *Lw.* (*Cryptophasa albicosta*, Lewin, Ins. N. S. W.) Meyrick, 33. Duaringa.

4. CRYPTOPHAGA PLATYPEDIMELA, *Lower.* Proc. Roy. Soc. S. A., 1894, 90. I have not seen this species. Lower's type was received from Mackay.

5. CRYPTOPHAGA NEPHROSEMA, *n.sp.* Male, 35 mm.; antennal pectinations, 2; vein 2 of forewings from  $\frac{3}{8}$ . (Head and face rubbed bare. Palpi broken.) Antennæ whitish. Thorax white irrorated with grey scales. Abdomen whitish; second segment reddish-brown. Legs white; anterior and middle tibiæ and tarsi annulated and irrorated with fuscous. Forewings oblong, posteriorly somewhat dilated, costa nearly straight, apex rounded, hindmargin slightly rounded, somewhat oblique; white finely irrorated with pale-grey; three conspicuous blotches in disc, pale-grey outlined with fuscous; first rather obscure near base; second before middle, irregularly constricted at and above fold; third beyond middle, reniform; three fuscous spots on costa, first at  $\frac{2}{5}$  nearly confluent with second blotch, second and third at  $\frac{3}{5}$  and  $\frac{4}{5}$ ; an ill-defined greyish suffusion between third blotch and hindmargin; a row of fuscous dots along hindmargin; cilia white with two interrupted grey lines. Hindwings fuscous; towards base and inner margin whitish; cilia whitish.

Cairns: one specimen taken by Mr. C. J. Wild in November (Coll. Brisbane Museum).

6. CRYPTOPHAGA STENOLEUCA, *Lower.* Proc. Roy. Soc. S.A. 1894, 89. Male, 39 mm.; antennal pectinations, 4. Female, 47 mm.

A fine and very distinct species. Mr. Dodd obtained a pair at Charters Towers from larvæ found on a species of *Grevillea* (?). Lower's type came from Duaringa.



7. *CRYPTOPHAGA STOCHASTIS*, *Meyr.* Meyrick, 30. Mr. Lower records this species from Herberton, North Queensland (Proc. Roy. Soc. S.A. 1894, 89).

8. *CRYPTOPHAGA TECTA*, *Lucas.* (*Pilostibes tecta*, Lucas, Proc. Linn. Soc. N.S.W. 1893, 161.) Not having seen any type of this species, I can only refer it to this genus conjecturally. Duaringa.

9. *CRYPTOPHAGA RUSSATA*, *Bull.* (*Cryptophasa russata*, Butler, Proc. Zool. Soc. 1877, 475.) Meyrick, 36. Male, 33 mm.; antennal pectinations, 4. One specimen in Mr. Illidge's collection, said to be from North Queensland.

10. *CRYPTOPHAGA PHAETHONTIA*, *Meyr.* Meyrick, 36. Duaringa.

11. *CRYPTOPHAGA RUBESCENS*, *Lw.* (*Cryptophasa rubescens*, Lewin, Ins. N.S.W.) Meyrick, 35. Brisbane: larvæ on various species of *Acacia*.

12. *CRYPTOPHAGA SARCINOTA*, *Meyr.* Meyrick. Male, 37 mm.; antennæ, white; pectinations,  $1\frac{1}{2}$ . Female, 51 mm.

Charters Towers: three specimens obtained by Mr. Dodd from larvæ feeding on *Eucalyptus*. Meyrick's types were received from Duaringa.

13. *CRYPTOPHAGA ACROLEUCA*, *n. sp.* Male, 32-34 mm.; antennal pectinations,  $\frac{2}{3}$ . Female, 40-62 mm. Forewings with vein 2 from  $\frac{4}{5}$ ; hindwings with 6 and 7 from a point. *Male*: Head and thorax dark ochreous-brown. Face whitish. Palpi whitish, terminal joint whitish or dark fuscous. Antennæ blackish. Abdomen blackish; second segment orange-red; tuft reddish-ochreous. Legs whitish, tinged with pale reddish; annulated with black. Forewings narrow oblong, costa almost straight, apex round-pointed, hindmargin obliquely rounded; dark ochreous-brown, a dark dot in disc at  $\frac{1}{3}$ ; a second, sometimes double, on fold below middle, and two placed transversely in disc at  $\frac{3}{5}$ , the lower somewhat anterior; three black dots on apical  $\frac{1}{3}$  of costa, sometimes obsolete; a narrow black line along hindmargin, sometimes interrupted; cilia dark ochreous-brown. Hindwings with hindmargin sinuate; dark fuscous, blackish towards base; cilia fuscous, sometimes whitish except towards anal angle. *Female*: Head and thorax whitish, tinged with reddish-ochreous. Palpi whitish. Antennæ dark fuscous. Legs whitish, tinged with pale reddish; annulated with black. Abdomen blackish; second segment orange-red; tuft and margin of penultimate segment whitish, tinged with reddish-ochreous. Forewings oblong, somewhat dilated posteriorily, costa slightly arched, apex round-pointed, hindmargin almost straight, moderately oblique; pale ochreous-brown, along costa inclining to whitish; discal dots as in male; a row of black dots along hindmargin and apical  $\frac{1}{5}$  of costa, sometimes inclining to be obsolete; cilia pale fuscous. Hindwings fuscous at base, gradually passing into whitish over apical third of disc, on which veins are outlined in fuscous; cilia white, towards anal angle fuscous.

Closely allied to *C. sarcinota*, *Meyr.*, but appears a good species. The male is very different in general appearance. The female may be best distinguished by the whitish apices of the hindwings. Brisbane: a series bred by Mr. Illidge from *Eucalyptus saligna*. Also found on other species of this genus.

14. *CRYPTOPHAGA EUMORPHA*, *n. sp.* Male, 25 mm.; antennal pectinations, 3; forewings with vein 2 from  $\frac{3}{4}$ ; hindwings with 6 and 7 stalked. Head ochreous-yellow. Palpi small, terminal joint minute, whitish. Antennæ blackish. Thorax whitish, anterior margin tinged with reddish-brown. Abdomen whitish, barred with fuscous; second segment reddish-brown. Legs blackish, annulated with white. Forewings narrow oblong, costa slightly arched, apex round-pointed, hindmargin obliquely rounded; slate-coloured; a black dot in disc beyond  $\frac{1}{3}$ , and two in disc at  $\frac{3}{5}$ , placed transversely, the upper one almost obsolete; a row of black dots along hindmargin and apical  $\frac{1}{3}$  of costa; cilia whitish. Hindwings pale greyish-fuscous; a series of black dots along hindmargin; between dots hindmargin is whitish; cilia whitish.

Allied to the following species. Charters Towers: one specimen bred by Mr. Dodd.

15. *CRYPTOPHAGA CHIONODES*, *n. sp.* Male, 36 mm.; antennal pectinations, 4. Female, 57-58 mm. Forewings with vein 2 from  $\frac{3}{4}$ ; hindwings with 6 and 7 from a point or short-stalked. Head whitish, ochreous, or pale reddish-brown. Palpi small, terminal joint minute, whitish. Antennæ fuscous. Thorax white, anterior margin faintly tinged with ochreous or reddish-brown. Abdomen white, barred with fuscous; second segment dull reddish-brown. Legs dark fuscous, annulated with white. Forewings oblong, costa slightly arched in male, moderately in female, apex round-pointed, hindmargin obliquely rounded; shining white; a black dot in disc at  $\frac{3}{5}$  (wanting in the two female specimens); a series of black dots along hindmargin and apical  $\frac{1}{3}$  of costa, encroaching into cilia; cilia white. Hindwings shining white; extreme base somewhat irrorated with fuscous; a series of black dots along hindmargin, encroaching on cilia; cilia white.

A fine and distinct species. Charters Towers: one male and two female specimens bred by Mr. Dodd from larvæ tunnelling the stems of *Eucalyptus* (a kind of Bloodwood).

16. *CRYPTOPHAGA NIGRICINCTA*, *n. sp.* Male, 25-30 mm.; antennal pectinations, 3. Female, 40-45 mm. Forewings with 2 from  $\frac{3}{4}$ ; hindwings with 6 and 7 from a point. *Male*: Head and face pale-orange. Palpi ochreous-whitish, terminal joint minute, dark fuscous, apex sometimes white. Antennæ blackish. Thorax dark slate-coloured, with a transverse pale-orange bar near anterior margin, which is usually whitish. Abdomen blackish; segments slenderly outlined with white scales; traces of orange suffusion usually present on second segment. Legs black with white annulations. Forewings rather narrowly oblong, costa slightly arched, apex round-pointed, hindmargin obliquely rounded; dark slate-coloured; a large black dot in disc beyond  $\frac{1}{3}$ , and two placed transversely in disc at  $\frac{3}{5}$ ; a row of black dots along hindmargin and apical  $\frac{1}{4}$  of costa; cilia white. Hindwings blackish; cilia white. *Female*: Head and face ochreous-whitish, or pale-orange. Palpi white, base of minute terminal joint fuscous. Antennæ fuscous. Thorax white, with traces of a transverse pale-orange line anteriorly. Abdomen alternately barred with white and dark fuscous; second segment black. Legs black with white annulations. Forewings oblong, posteriorly slightly dilated, costa gently arched, apex round-pointed, hindmargin obliquely rounded;

clear white; a black dot in disc beyond  $\frac{1}{3}$ , and two in disc at  $\frac{3}{5}$  placed transversely—the lower rather posterior; a series of black dots along hindmargin and apical  $\frac{1}{5}$  of costa; cilia white. Hindwings white; sometimes irregularly suffused with fuscous; a row of black dots along hindmargin, sometimes extending into cilia; cilia white.

Closely allied to *C. delocentra*, Meyr., and subsequent research may show that it is merely a geographical form of this species. The male, however, appears very distinct, and the female may be distinguished by the black second abdominal segment. A considerable series shows these differences to be constant. We have seen both sexes of *C. delocentra* taken by Mr. Lower in South Australia, and in these the forewings of the male are white. (Trans. Roy. Soc. S.A. 1892.) Brisbane: larvæ found in the stems of several species of *Eucalyptus*.

17. CRYPTOPHAGA EPADELPHA, Meyr. Meyrick, 36. Male, 31-36 mm. (I have seen one specimen, perhaps starved, only 25 mm.); antennal pectinations, 4. Female, 40-48 mm. The hindwings in male are uniform blackish-fuscous.

Brisbane: larvæ found commonly tunnelling the stems of *Tristania conferta* (Box-tree), less commonly *Tristania suaveolens* (Swamp Mahogany), dragging in leaves for food; moths emerge in November and December. This and the two following species are closely allied, and the larvæ are also closely similar. *C. epadelpha* may be distinguished by the total absence of discal dots on the forewings; *C. pultenæ* by the more rounded apices of the forewings and the presence of discal dots; the white variety of *C. nubila* resembles *C. epadelpha* in shape of wing, the discal dots are usually present, and it never has the pure snow-white tinge possessed by fresh specimens of the other two species.

18. CRYPTOPHAGA PULTENÆ, Lw. (*Cryptophasa pultenæ*, Lewin, Ins. N. S. W.) Meyrick, 38. Male, 31-33 mm.; antennal pectinations, 4. Female, 32-33 mm.

Brisbane: bred by Mr. Illidge from larvæ tunnelling the stems of *Eugenia myrtifolia* and *Eugenia Smithii*. Meyrick gives *Pultenæ villosa* as the foodplant.

19. CRYPTOPHAGA NUBILA, Lucas. Proc. Linn. Soc. N.S.W. 1893, 161. (*Cryptophaga intermedia*, ibid., 162.) Male, 28-33 mm.; antennal pectinations 4. Females, 32-42 mm. Forewings with vein 2 from  $\frac{3}{4}$ . Hindwings with 6 and 7 from a point. Head, face, and palpi white. Antennæ white at base, passing into fuscous. Thorax white, ochreous-whitish, or pale slate-coloured. Abdomen in male fuscous, segments narrowly edged with white; in female white; in both sexes second segment orange-red. Legs white, tarsi annulated with fuscous. Forewings oblong, costa in male very slightly, in female moderately arched, apex moderately rounded, hindmargin rounded, slightly oblique; white, ochreous-whitish, or pale slate-coloured, frequently sparsely, sometimes densely, irrorated with dark fuscous scales; costal margin white; a black dot in disc at  $\frac{1}{3}$ , and two others transversely placed at  $\frac{3}{5}$ , lower somewhat posterior—these are very rarely obsolete, but sometimes lost in the fuscous suffusion; a row of black dots along hindmargin and apical  $\frac{1}{5}$  of costa, sometimes obsolete; cilia



white or tinged with pale fuscous, in which case a darker line at  $\frac{1}{3}$  can usually be traced. Hindwings in male dark fuscous, in female white, sometimes more or less suffused with fuscous; a hindmarginal series of black dots; cilia white.

*Var. Alba*.—It is convenient to denote by this name the specimens with white ground-colour of forewings without fuscous irradiation.

A very variable species. I have bred a large series, and have obtained the most extreme examples from the same food-plant. I regard the white colouration as ancestral, the darker varieties as a protective adaptation to the colours of the bark of the trees to which the species is attached.

Brisbane: the larvæ tunnelling the stems and dragging in for food the leaves of *Melaleuca leucodendron* (Tea-tree), *Melaleuca linariifolia*, *Callistemon salignus*, *Callistemon lanceolatus*, and probably other species of these genera; also of *Tristania suaveolens* (Swamp Mahogany) and *Backhousia myrtifolia*; and in gardens of the Guava. The moths emerge in November and December.

20. CRYPTOPHAGA ECCLESIASTIS, *Meyr.* Meyrick, Proc. Linn. Soc. N.S.W., 1886, 1040; and *op. cit.* 32. Male, 30-35 mm.; antennal pectinations, 3; forewings fuscous; hindwings dark-fuscous with a purple iridescence; abdomen dark-fuscous. Female, 53-59 mm.; forewings very pale whitish-grey; hindwings similar, suffused with fuscous towards hindmargin. (Meyrick's type from Victoria was shining white.)

This species is readily distinguished by the curious coppery-purple hindmarginal fascia. It is also characterised by the minute labial palpi. Brisbane: four specimens bred by Mr. Illidge from larvæ tunnelling the stems of *Eucalyptus corymbosa* (Bloodwood).

21. CRYPTOPHAGA FLAVOLINEATA, *Walk.* (*Cryptolechia flavolineata*, Walker, 749; *Cryptophaga flavolineata*, Meyrick, 36). Male, 33-36 mm.; antennal pectinations,  $\frac{1}{2}$ . Female, 39-45 mm.

Brisbane: larvæ live in stems of *Banksia integrifolia*, dragging in leaves for food.

22. CRYPTOPHAGA SPILONOTA, *Scott.* (*Cryptophasa spilonota*, Scott, Austr. Lep. 10, pl. 3.) Meyrick, 35. Male, 37 mm.; antennal pectinations,  $\frac{1}{2}$ . Female, 41 mm.

Darra, near Brisbane: bred by Mr. Illidge from larvæ tunnelling the stems of *Banksia integrifolia*.

## 2. XYLORYCTA, *Meyr.*

Antennal ciliations of male,  $\frac{1}{4}$  to 2. This genus differs from *Cryptophaga* only in the non-pectinated antennæ of the male. Recent discoveries have brought the two into very near relationship. I have been compelled to drop Meyrick's genus, *Telecrates*, which was distinguished only by the shorter antennal ciliations, as the new species referable to the present genus render it no longer tenable. Meyrick himself anticipated that this might come to be the case (*op. cit.* 57).

The following is a tabulation of the Queensland species :—

- |  |     |                        |
|--|-----|------------------------|
| 1. Palpi small, terminal joint minute ...                          | 28  | <i>neomorpha</i> .     |
| „ long, terminal joint well developed                              | 2.  |                        |
| 2. Forelegs much thickened with scales                             | 23  | <i>stigmatias</i> .    |
| „ normal ... ..  | 3.  |                        |
| 3. Forewings with dark streaks along veins                         | 24  | <i>cephalochra</i> .   |
| „ without „  | 4.  |                        |
| 4. Hindwings yellow or yellowish ...                               | 5.  |                        |
| „ not yellow ... ..  | 7.  |                        |
| 5. Forewings with ground-colour fuscous                            | 38  | <i>heliomacula</i> .   |
| „ white ... ..   | 6.  |                        |
| 6. Forewings with a broad fuscous longitudinal band ... ..         | 25  | <i>porphyrinella</i> . |
| Forewings with oblique fasciæ ...                                  | 37  | <i>ophiogramma</i> .   |
| 7. Forewings yellow, with purple fasciæ                            | 39  | <i>lætiorella</i> .    |
| „ not yellow ... ..  | 8.  |                        |
| 8. Forewings slaty-grey ... ..                                     | 9.  |                        |
| „ not slaty-grey ... ..  | 10. |                        |
| 9. Costa yellow ... ..   | 26  | <i>flavicosta</i> .    |
| „ white ... ..   | 27  | <i>molybdina</i> .     |
| 10. Forewings grey or fuscous, with white costal streak ... ..     | 11. |                        |
| Forewings white ... ..   | 12. |                        |
| 11. Costal streak reaching apex ...                                | 29  | <i>tapeina</i> .       |
| „ not reaching apex ... ..   | 30  | <i>melaleuca</i> .     |
| 12. Forewings with one or more longitudinal streaks ... ..         | 13. |                        |
| Forewings without markings ...                                     | 14. |                        |
| 13. Forewings with central and dorsal streaks ... ..               | 31  | <i>strigata</i> .      |
| Forewings with dorsal streak only ...                              | 33  | <i>candescens</i> .    |
| 14. Antennal ciliations of male, $\frac{1}{4}$ - $\frac{1}{3}$ ... | 36  | <i>placidella</i> .    |
| „ „ $1\frac{1}{2}$ -2 ... ..                                       | 15. |                        |
| 15. Face wholly white ... ..                                       | 32  | <i>homoleuca</i> .     |
| „ not wholly white ... ..  | 16. |                        |
| 16. Sides of face orange ... ..                                    | 34  | <i>cosmopis</i> .      |
| „ fuscous ... ..   | 35  | <i>argentella</i> .    |

23. *XYLORYCTA STIGMATIAS*, *Meyr.* (*Pilostibes stigmatias*, *Meyrick*, 27.) Male, 38 mm; antennæ serrate in terminal half; ciliations,  $\frac{2}{3}$ ; anterior tarsi thickened with long scales.

Mount Tambourine: one specimen at light in November.  
Recorded from Brisbane by Lucas (*Linn. Soc. N.S.W.* 1893).

24. *XYLORYCTA CEPHALOCHRA*, *Lower.* (*Cryptophaga cephalochra*, *Lower*, *Proc. Roy. Soc. S.A.* 1894, 90.) Male, 34 mm; antennæ slightly serrate towards extremity; ciliations,  $1\frac{1}{4}$ .

Brisbane: two specimens in October.

25. *XYLORYCTA PORPHYRINELLA*, *Walkr.* (*Cryptolechia porphyrinella*, *Walk.*, 771; *Cryptophaga porphyrinella*, *Meyrick*, 32; *Brunia intersecta*, *Lucas*, *Proc. Linn. Soc. N.S.W.*, 1889; *Xylorycta*



*porphyrinella*, Lower, Proc. Roy. Soc. S.A. 1894, 91.) Male, 27-30 mm.; antennæ slightly serrate towards extremity; ciliations,  $\frac{2}{3}$ . Female, 31-35 mm.

Brisbane: a series bred by Mr. Illidge from larvæ tunnelling the stems of *Exocarpus cupressiformis* (Native Cherry), and dragging in leaves for food.

26. *XYLORYCTA FLAVICOSTA*, Lucas. (*Cryptophaga flavicosta*, Lucas, Proc. Linn. Soc. N.S.W. 1893, 163.) Male, 26 mm.; antennal ciliations,  $1\frac{1}{2}$ -2. Female, 35-36 mm. Readily distinguished by the slate-coloured forewings with orange costal streak.

Brisbane: larvæ discovered by Mr. Illidge in the stems of several species of *Eucalyptus*.

*Var. pallida*.—Mr. Dodd has brought a male and female specimen from Charters Towers with whitish hindwings, forewings rather paler than in Brisbane types, with broader orange costal streak, and more black dots on hindmargin.

27. *XYLORYCTA MOLYBDINA*, *n.sp.* Female, 22-29 mm. Head, face, palpi, and antennæ white. Thorax pale slate-colour. Abdomen grey. Legs whitish. Forewings oblong, dilated posteriorly, costa slightly arched, apex round-pointed, hindmargin obliquely rounded; pale slate-colour; a white streak along costal edge not reaching apex; cilia pale slate-colour. Hindwings grey, paler towards base; cilia grey.

Brisbane: several female specimens bred from larvæ found in the stems of *Melaleuca leucadendron* (Tea-tree).

28. *XYLORYCTA NEOMORPHA*, *n.sp.* Male, 25 mm. Female, 34 mm. Antennal ciliations in male, 2. Labial palpi very short, not reaching base of antennæ, terminal joint minute. Head, face, and palpi white. Antennæ whitish. Thorax white or whitish-grey. Abdomen fuscous. Legs reddish, posterior tibiæ white. Forewings posteriorly dilated, costa gently arched, apex rather acute, hindmargin very obliquely rounded; whitish-grey; a pale-orange line along costa (in female specimen absent); a large blotch in disc, extending to inner margin, but not to costa, irrorated more or less densely with reddish-brown scales; in this are two elongate pale-orange spots at  $\frac{2}{5}$  and  $\frac{3}{5}$  of disc; a third similar spot on fold obliquely below first, sometimes obsolete; cilia pale reddish-brown. Hindwings dark fuscous; cilia pale ochreous.

Differs from the rest of the genus by the very short labial palpi; but I think it wiser to include it here, than to make a new genus. Charters Towers: two specimens received from Mr. Dodd.

29. *XYLORYCTA TAPEINA*, *n.sp.* Male, 24 mm.; antennal ciliations,  $\frac{1}{2}$ . Head, face, palpi, and antennæ whitish. Thorax fuscous, irrorated with whitish scales. Abdomen ochreous-whitish. Legs whitish with fuscous irroration. Forewings elongate, costa gently arched, apex round-pointed, hindmargin obliquely rounded; fuscous irrorated with white scales; a broad white streak along whole of costa, narrowing to a point at base and apex; an obscure whitish spot above middle of inner margin; a dark spot in disc at  $\frac{2}{3}$ ; cilia fuscous. Hindwings and cilia pale-grey.

Charters Towers: two specimens received from Mr. Dodd.

30. *XYLORYCTA MELALEUCAE*, *n.sp.* Male, 17-18 mm.; antennal ciliations,  $\frac{1}{4}$ . Head, face, palpi, and antennæ whitish-grey. Thorax grey. Abdomen ochreous. Legs whitish; anterior pair infuscated. Forewings elongate, costa rather strongly arched near base, thence straight, apex round-pointed, hindmargin obliquely rounded; fuscous-grey, irrorated with dark fuscous scales; a broad snow-white streak along costa near base, ceasing rather abruptly beyond middle; some dark suffusion in basal part of disc; two fuscous dots placed transversely in disc at  $\frac{2}{3}$ ; hindmarginal edge barred with fuscous and whitish; cilia dark fuscous; some white scales about middle of hindmargin. Hindwings and cilia pale-grey.

Coomera River, Moreton Bay: two specimens from larvæ tunnelling the stems of *Melaleuca genistifolia*. The specimens were unfortunately considerably damaged, so that the description may not be accurate as to finer details.

31. *XYLORYCTA STRIGATA*, *Liv.* (*Cryptophasa strigata*, Lewin, Ins. N.S.W.; *Xylorycta strigata*, Meyrick, 59.) Brisbane: found by Mr. Illidge feeding in the stems of *Banksia integrifolia*.

32. *XYLORYCTA HOMOLECA*, *Lower*. Trans. Roy. Soc. S.A. 1894, 91. Male and female, 31-35 mm.; antennal ciliations in male,  $1\frac{1}{2}$ .

This is certainly very near *X. orectis*, Meyr., differing only in the total absence of ochreous tinge on head, thorax, and costal margins and the fuscous colouration of legs. In my specimens the forewings are snow-white. Charters Towers: three specimens from Mr. Dodd. Lower's type was from near Duaringa. Mr. Dodd informs me that he found the larvæ feeding under a web on the bark of *Cupania*.

33. *XYLORYCTA CANDESCENS*, *Lower*. Trans. Roy. Soc. S.A. 1896, 163. I do not know this species. It is described by Lower from a specimen taken in Brisbane in December.

34. *XYLORYCTA COSMOPIS*, *Meyr.* Meyrick, 60. Antennal ciliations of male, 2. Brisbane: one specimen. I am not sure whether this species is distinct from the following.

35. *XYLORYCTA ARGENTELLA*, *Walk.* (*Cryptolechia argentella*, Walk. 750; *Xylorycta argentella*, Meyrick, 60.) Antennal ciliations of male, 2. Brisbane: one specimen.

36. *XYLORYCTA PLACIDELLA*, *Walk.* (*Cryptolechia placidella*, Walk. 750; *Telecrates placidella*, Meyrick, 63.) Antennal ciliations of male,  $\frac{1}{2}$ . Brisbane: not uncommon.

37. *XYLORYCTA OPHIOGRAMMA*, *Meyr.* Meyrick, 58. Two specimens from the Dawson River. (Brisbane Museum.) Meyrick's types were from Duaringa.

38. *XYLORYCTA HELIOMACULA*, *Lower*. (*Telecrates heliomacula*, Lower, Proc. Roy. Soc. S. A. 1894, 92.) Antennal ciliations in male, 1. One specimen (Brisbane Museum): the locality is not recorded, but it was probably taken in the neighbourhood of Brisbane.

39. *XYLORYCTA LÆTIORELLA*, *Walk.* (*Oecophora lætiorella*, Walk. 677; *Telecrates lætiorella*, Meyrick, 62.) Antennal ciliations of male,  $\frac{1}{5}$ . Brisbane: Mr. Illidge informs me that he has found this species commonly feeding on the inner bark of *Eucalyptus* (Stringybark), but has never observed it to tunnel the stems.

## 3. TYMBOPHORA, Meyr.

40. TYMBOPHORA PELTASTIS, *Meyr.* Meyrick, 56. Brisbane: not uncommon. Mr. Illidge has observed the larvæ feeding on the back of a smooth-barked *Eucalyptus*.

## 4. HYLYPNES, n. g.

Head with appressed hairs; ocelli absent; tongue well developed. Antennæ moderate, in male filiform, with very long ciliations (5), basal joint rather stout, without pecten. Labial palpi long, recurved, second joint with appressed scales, terminal joint nearly as long as second, smooth, acute. Maxillary palpi very short. Thorax smooth. Abdomen moderate. Posterior tibiæ rough-haired above and beneath. Forewings with vein 1 long—furcate towards base, 2 from  $\frac{5}{6}$ , 3 from angle, 7 and 8 stalked, 7 to hindmargin, 11 from middle. Hindwings 1, towards base below median and inner margin densely clothed with long hairs, 3 and 4 stalked, 5 approximated to 4 at base, tolerably parallel, 6 and 7 stalked, 8 connected with cell at a point near base.

Distinguished from *Xyloryeta* by the very long antennal ciliations.

41. HYLYPNES PUDICA, *Lower.* (*Crypsicharis pudica*, Lower, Proc. Roy. Soc. S.A. 1896, 164.) Male, 16-19 mm. Female, 20-23 mm. Antennal ciliations in male, 5. The sexes differ in shape of forewing. In male apex is obtuse and hindmargin rounded; in female apex acute and hindmargin slightly sinuate.

Brisbane: commonly taken among tropical forest growth.

## 5. LICHENAULA, Meyr.

I regard this as the central and probably the largest genus of the family. Veins 6 and 7 of the hindwings are closely approximated at base, and it is not always easy to observe that they are really separate. This may often be most conveniently made evident by cautiously moistening the wing with spirit, and viewing it with a good lens by oblique light. In at least one species, *L. choriodes*, Meyr., these veins sometimes vary, in some abnormal specimens proceeding from a point or even being stalked. In the length of the antennal ciliations in the male, and in the termination of vein 7 of the forewings, there is considerable variation. Nevertheless, I am of opinion that the genus should not be divided.

The following is a tabulation of the Queensland species:—

- |  |                         |
|--|-------------------------|
| 1. Forewings with a well-marked inner-marginal streak ... .. | 2.                      |
| Forewings without a well-marked inner-marginal streak ... .. | 3.                      |
| 2. Inner-marginal streak strongly toothed                    | 45 <i>undulatella</i> . |
| "                    " straight                              | 47 <i>dissimilis</i> .  |
| 3. Thorax white or whitish ... ..                            | 4.                      |
| "          fuscous or grey ... ..                            | 15.                     |
| 4. Thorax with a black anterior bar ...                      | 5.                      |
| "          without a black anterior bar ...                  | 7.                      |



5. Cilia of hindwings ochreous-tinged ... 53 *callisema*.  
    ,,         ,,         not ochreous-tinged   6.
6. Forewings with a well-defined white  
   fascia ... .. 52 *melanoleuca*  
   Forewings without a well-defined  
   white fascia ... .. 51 *lichenea*.
7. Forewings with fuscous streaks along  
   veins ... .. 48 *phloeochroa*.  
   Forewings without fuscous streaks  
   along veins ... .. 8.
8. Forewings with an angulated posterior  
   line ... .. 9.  
   Forewings without an angulated  
   posterior line ... .. 11.
9. Forewings with a distinct inner-  
   marginal blotch ... .. 43 *goniodes*.  
   Forewings without a distinct inner-  
   marginal blotch ... .. 10.
10. Forewings with longitudinal streaks  
   in disc ... .. 58 *micradelpha*.  
   Forewings without longitudinal streaks  
   in disc ... .. 44 *oxygona*.
11. Forewings with 2 or more fasciæ ... 12.  
    ,,         without distinct fasciæ ... 13.
12. Forewings with 3 broad transverse  
   blackish fasciæ ... .. 56 *arisema*.  
   Forewings without 3 broad transverse  
   blackish fasciæ ... .. 57 *eucrines*.
13. Forewings ochreous-brown with white  
   blotches ... .. 54 *laniata*.  
   Forewings not ochreous-brown with  
   white blotches ... .. 14.
14. Forewings clear white ... .. 59 *inscripta*.  
    ,,         white irrorated with fuscous 15.
15. Forewings with an oblique fuscous  
   streak near base .. .. 55 *melanosema*.  
   Forewings without an oblique fuscous  
   streak near base ... .. 50 *choriodes*.
16. Forewings with blackish transverse  
   streaks ... .. 49 *onychodes*.  
   Forewings without blackish transverse  
   streaks ... .. 17.
17. Forewings with costal portion of disc  
   suffused with whitish ... .. 46 *haplochroa*.  
   Forewings with costal portion of disc  
   not suffused with whitish ... 18.
18. Hindwings with hindmargin sinuate 60 *ignota*.  
    ,,         ,,         ,,         rounded 42 *fumata*.

42. *LICHENAULA FUMATA*, *n.sp.* Male, 25-28 mm.; antennal ciliations,  $1\frac{1}{2}$ -2; forewings with vein 7 to hindmargin. Head fuscous more or less irrorated with whitish scales. Face and palpi whitish. Antennæ fuscous or whitish. Thorax dark fuscous irrorated with whitish scales. Abdomen robust; grey. Legs grey-whitish; anterior tibiæ and tarsi infuscated. Forewings somewhat dilated posteriorly, costa moderately arched, apex round-pointed, hindmargin obliquely rounded; pale fuscous confusedly irrorated with blackish-fuscous, and sometimes also with white scales; a blackish-fuscous crescentic mark in disc at  $\frac{2}{5}$ ; cilia fuscous, sometimes with a darker median line. Hindwings grey-whitish, fuscous tinged towards hindmargin; cilia grey-whitish, with a fuscous line at  $\frac{2}{5}$ .

To this species I refer two specimens, male and female, taken by Mr. Dodd, at Charters Towers, in which the forewings are without white irroration, and a brighter-coloured male taken by Mr. Illidge in Brisbane. The former came from larvæ found on a species of *Grevillea* (?).

43. *LICHENAULA GONIODES*, *n.sp.* Males, 24 mm.; antennal ciliations, 2; vein 7 of forewings to hindmargin. Head, face, palpi, and antennæ white. Thorax white. Abdomen white; posterior part of each segment reddish-fuscous. Legs whitish; anterior pair fuscous. Forewings moderate, costa moderately arched, apex round-pointed, hindmargin slightly sinuate, somewhat oblique; white, sparsely irrorated with reddish-fuscous scales; basal third of costa blackish; a squarish reddish-fuscous blotch on inner margin before middle, reaching above fold; a conspicuous reddish fuscous line from costa at  $\frac{3}{4}$ , very sharply angulated in disc, and continued parallel to hindmargin to before anal angle; cilia pale reddish-fuscous with a few whitish scales towards anal angle. Hindwings and cilia pale ochreous-whitish.

Brisbane: one specimen taken at light by Mr. C. J. Wild (Coll. Brisbane Museum).

44. *LICHENAULA OXYGONA*, *Lucas. Trans. Nat. His. Soc., Q.* 1894, 14. Male, 24 mm. Forewings with vein 7 to hindmargin. Head and face white. Palpi white, terminal joint fuscous anteriorly. Antennæ ochreous-fuscous. Thorax white, shading into whitish-grey posteriorly. Abdomen grey. Legs whitish. Forewings oblong, somewhat dilated posteriorly, costa slightly arched, apex round-pointed, hindmargin moderately oblique, almost straight; pale whitish-grey irrorated with pale fuscous scales; along costa broadly whitish; costal edge fuscous at extreme base, thence ochreous to  $\frac{2}{5}$ ; a short very outwardly oblique ochreous-fuscous streak from costa at  $\frac{2}{5}$ ; bounded externally by a white line which is sharply bent in disc, and continued in an inwardly convex line to anal angle; this line is sharply defined anteriorly, beyond it disc is pale whitish-grey; three ochreous fuscous dots on apical  $\frac{1}{4}$  of costa; a narrow blackish line outlining apex, joined by a short narrow longitudinal blackish line from disc; a few blackish marginal scales at anal angle; cilia grey, with a white basal line and an ochreous-fuscous line at  $\frac{2}{5}$  at apex. Hindwings grey; towards apex whitish; cilia whitish-grey; at apex darker with a fuscous line before middle.

Redescribed from the original type. Brisbane: reared by Mr. Illidge from a larva tunnelling the stem of an unknown shrub.



45. *LICHENAULA UNDULATELLA*, *Walk.* (*Cryptolechia undulatella*, Walker, 756; *Lichenaula undulatella*, Meyrick, 47.) Male, 17-20 mm. Female, 23 mm. Mr. Illidge has a variety of the male in which the whitish costal coloration extends beyond middle of disc, reducing the red-brown ground-colour to a minimum, and giving the specimen at first sight a very distinct appearance.

Brisbane: Mr. Illidge has found the larvæ feeding in a tube among the leaves of *Jacksonia scoparia* (Dogwood), also of *Acacia*.

46. *LICHENAULA HAPLOCHROA*, *n.sp.* Male, 22-25 mm. Female, 31 mm. Forewings with vein 7 to hindmargin. Head and face grey. Palpi whitish, terminal joint pale fuscous. Antennæ grey; ciliations in male,  $1\frac{1}{2}$ . Thorax grey. Abdomen ochreous-whitish. Legs whitish; anterior pair slightly infuscated. Forewings narrow-oblong, costa moderately arched, apex obtuse, hindmargin very oblique, scarcely rounded; whitish sparsely irrorated with grey scales; below fold grey; a grey dot on fold below middle, and a single or double dot in disc at  $\frac{3}{8}$ , sometimes obsolete; cilia grey. Hindwings and cilia grey-whitish.

Brisbane: four specimens.

47. *LICHENAULA DISSIMILIS*, *n.sp.* Male, 21 mm. Antennal ciliations, 2. Female, 35 mm. Forewings with vein 7 to hindmargin. Head and face white. Palpi fuscous; base of second joint whitish. Antennæ whitish. Thorax fuscous; anterior margin narrowly, lateral margins broadly, snow-white. Abdomen ochreous-whitish. Legs ochreous-whitish, anterior pair infuscated. Forewings narrow-elongate, costa scarcely arched, apex rounded, hindmargin almost straight, moderately oblique; shining snow-white; costal edge narrowly ochreous; a broad fuscous streak along inner margin from near base to hindmargin; cilia at apex snow-white, along hindmargin and at anal angle ochreous-fuscous. Hindwings pale grey; cilia whitish, becoming greyish towards anal angle.

This species is a striking example of the deceptiveness of superficial characters. It so closely resembles *Chalarotona craspedota*, Meyr., that I at first mistook it for that species, and had no doubt that it was closely allied, until examination of the structural characters showed that the two were widely separated. Charters Towers: two specimens from Mr. Dodd, who says that the larvæ spin together the leaves of a species of *Grevillea* (?).

48. *LICHENAULA PHLOEOCHROA*, *n.sp.* Male, 19-24 mm. antennal ciliations,  $\frac{2}{3}$ . Forewings with vein 7 to hindmargin. Head and face whitish. Palpi whitish, apical  $\frac{1}{3}$  of terminal joint fuscous. Antennæ whitish. Thorax whitish. Abdomen ochreous-whitish. Legs whitish; anterior tibiæ fuscous internally, anterior tarsi annulated with fuscous. Forewings oblong, dilated posteriorly, costa moderately arched, apex round-pointed, hindmargin slightly sinuate below apex, obliquely rounded; whitish; the veins partly outlined by blackish fuscous scales; basal part of disc sparsely irrorated with fuscous; a pale reddish-brown suffusion over middle and posterior portions of disc above fold; several inconspicuous black dots on apical  $\frac{1}{3}$  of costa; cilia whitish irrorated with fuscous scales. Hindwings pale grey; cilia whitish.

Brisbane: two specimens from larvæ found in stems of *Melaleuca leucadendron* (Tea-tree), emerging in November.

49. *LICHENAULA ONYCHODES*, *n.sp.* Male and female, 16-18 mm. Antennal ciliations in male,  $\frac{1}{2}$ . Forewings with vein 7 to hindmargin. Head and face grey. Palpi ochreous-whitish; terminal joint slightly infuscated. Antennæ fuscous. Thorax grey. Abdomen ochreous-fuscous. Legs ochreous-whitish; anterior pair infuscated. Forewings oblong, posteriorly dilated, costa gently arched, apex sub-rectangular, hindmargin nearly straight, scarcely oblique; grey with blackish markings; extreme base of costa blackish; a black line from base to inner-margin at  $\frac{1}{3}$ ; from this another line proceeds obliquely towards but not reaching costa; an inwardly curved transverse line in disc before  $\frac{1}{3}$ , not quite reaching either margin; an inwardly oblique line from costa at  $\frac{3}{5}$  towards but not reaching middle of inner-margin; another inwardly curved line from before anal angle not reaching costa; a faint outwardly curved line in disc beyond this; cilia grey. Hindwings and cilia whitish-grey.

Brisbane: seven specimens at light.

50. *LICHENAULA CHORIODES*, *Meyr.* Meyrick, 50. In this species veins 6 and 7 of the hindwings are very close together at base, so that sometimes they proceed from a point, and I have one abnormal specimen in which they are actually stalked on both sides. Brisbane.

51. *LICHENAULA LICHENEA*, *Meyr.* Meyrick, 49. Common among the granite rocks at Ballandean (2,500 feet), near Wallangarra.

52. *LICHENAULA MELANOLEUCA*, *n.sp.* Female, 15 mm. Forewings with vein 7 to apex. Head and face white. Palpi white, base of second, base and apex of terminal joint blackish. Antennæ blackish; basal joint white. Thorax white, with a transverse black band anteriorly. Abdomen grey. Legs whitish, anterior pair infuscated. Forewings elongate, costa gently arched, apex round-pointed, hindmargin obliquely rounded; blackish-fuscous with white markings; base narrowly white; an outwardly oblique, irregularly outlined fascia from costa at  $\frac{1}{6}$  to inner-margin at  $\frac{1}{4}$ ; a large white spot on costa at  $\frac{2}{5}$  not reaching fold; another on costa at  $\frac{3}{5}$ ; a similar spot in disc at  $\frac{2}{3}$  confluent with the preceding; a smaller spot below centre of disc; a fifth spot at anal angle; and two minute dots at and before apex of costa; cilia whitish, bases blackish-fuscous except opposite costal dots and anal angle. Hindwings and cilia grey.

Ballandean (2,500 feet), near Wallangarra: one specimen in February.

53. *LICHENAULA CALLISEMA*, *n.sp.* Male, 18 mm. Antennal ciliations,  $\frac{1}{2}$ . Forewings with vein 7 to apex. Head and face snow-white. Palpi white, base of second joint and base and apex of terminal joint fuscous. Antennæ fuscous, basal joint white. Thorax white, anterior margin broadly, posterior narrowly fuscous. Abdomen pale ochreous-whitish. Legs ochreous-whitish, anterior pair infuscated. Forewings elongate, costa gently arched, apex round-pointed, hindmargin nearly straight, moderately oblique, snow-white, markings fuscous; costal edge narrowly fuscous towards base; a strongly marked oblique fascia near base; a broad fuscous blotch on middle-half of inner-margin, enclosing a small white spot; this blotch narrows in disc and gives off two lines, one of which reaches costa at  $\frac{1}{2}$ , the other is prolonged beneath costa towards base of wing; an irregular blotch extending from costa at  $\frac{5}{6}$  to anal angle, giving off a fine line joining the central

blotch near inner-margin, and a short line to costa at  $\frac{2}{3}$ ; two or three fuscous dots on hindmargin; cilia white, barred with fuscous. Hindwings and cilia pale-grey.

A very distinct species nearest *L. calligrapha*, Meyr. Ballandean (2,500 feet), near Wallangarra: two specimens in February.

54. *LICHENAULA LANIATA*, Meyr. Meyrick, 47. The markings of this species are somewhat variable, but it is always easily recognised. Brisbane: not uncommon.

55. *LICHENAULA MELANOSEMA*, *n.sp.* Male, 14 mm. Antennal ciliations,  $1\frac{1}{2}$ . Forewings with vein 7 to hindmargin. Head, face, palpi, and antennæ white. Thorax white, irrorated with fuscous, with a dark fuscous spot posteriorly. Abdomen whitish. Legs whitish. Forewings elongate, costa very slightly arched, apex round-pointed, hindmargin very obliquely rounded; white, irrorated with fuscous; a well-marked dark fuscous streak from inner-margin at base, not quite reaching costa at  $\frac{1}{6}$ ; a dark fuscous blotch resting on middle of fold; pale fuscous suffusions below costa at  $\frac{2}{3}$  and  $\frac{4}{5}$ , and above anal angle; a few dark fuscous scales in disc at  $\frac{2}{3}$ ; cilia white, with pale fuscous irroration. Hindwings and cilia grey.

This species seems referable here, but I should like to examine further specimens before being quite certain. Brisbane: one specimen.

56. *LICHENAULA ARISEMA*, Meyr. Meyrick, 48. Wynnum, near Brisbane: one specimen on New Year's Day.

57. *LICHENAULA EUCRINES*, *n.sp.* Male, 13 mm. Antennal ciliations, 1. Forewings with vein 7 to hindmargin. Head, face, and palpi snow-white. Antennæ whitish. Thorax snow-white, a small ochreous-fuscous dot on each shoulder. Abdomen whitish. Forewings elongate, costa gently arched, apex round-pointed, hindmargin sinuate beneath apex, thence straight, slightly oblique; snow-white; costal edge at base fuscous; a broad ochreous-fuscous line from base to inner-margin at  $\frac{1}{5}$ ; an outwardly curved ochreous-fuscous fascia from costa at  $\frac{1}{3}$  to inner-margin at  $\frac{2}{5}$ ; a triangular fuscous blotch on hindmargin from apex to anal angle, joined by two ochreous-fuscous lines from costa at  $\frac{2}{3}$  and  $\frac{4}{5}$ ; cilia white, at apex and anal angle fuscous. Hindwings and cilia grey.

Brisbane: one specimen taken by Mr. Illidge.

58. *LICHENAULA MICRADELPHA*, *n.sp.* Male and female, 14-15 mm. Antennæ in male thickened, slightly serrulate; ciliations extremely short, about  $\frac{1}{6}$ . Forewings with vein 7 to just below apex. Head and face white. Palpi white, terminal joint fuscous towards apex. Antennæ fuscous. Thorax white. Abdomen grey. Legs whitish. Forewings elongate, costa gently arched, apex round-pointed, hindmargin nearly straight, oblique; white, inner and hindmarginal portions of disc more or less suffused with greyish; costal edge fuscous towards base; a narrow fuscous line along fold; a longitudinal fuscous line in central third of disc; an outwardly oblique greyish line from costa at  $\frac{2}{3}$  towards hindmargin, sharply bent in disc and continued to anal angle, posteriorly this line is margined with white, anteriorly it is more or less lost in the greyish suffusion; a short fuscous longitudinal streak from apex; a greyish suffusion along hindmargin; cilia greyish with a narrow white basal line. Hindwings and cilia pale-grey.

The angulated fascia recalls *L. oxygona*, Lucas. Brisbane: two specimens taken by Mr. Illidge.



59. *LICHENAULA INSCRIPTA*, *n.sp.* Male, 20 mm. Antennal ciliations,  $\frac{1}{3}$ . Forewings with vein 7 to just below apex. Head and face white. Palpi white, terminal joint pale fuscous towards apex. Antennæ fuscous, paler towards base. Thorax white. Abdomen (broken). Legs ochreous-whitish. Forewings elongate, costa moderately arched, apex round-pointed, hindmargin slightly sinuate, moderately oblique; white; basal  $\frac{1}{3}$  of costal edge fuscous; a fuscous dot on middle of fold; faint indications of a line from costa at  $\frac{2}{3}$  to anal angle, consisting of a fuscous dot on costa, two smaller dots in disc, and a pale fuscous suffusion at anal angle; hindmargin suffusedly outlined with fuscous; cilia white. Hindwings and cilia pale-grey.

This species may be somewhat variable in the intensity of markings. Brisbane: one specimen in December.

60. *LICHENAULA IGNOTA*, *n.sp.* Male and female, 15-18 mm. Antennal ciliations in male,  $\frac{1}{4}$ . Forewings with vein 7 to hindmargin. Head, face, and palpi grey, densely irrorated with blackish-fuscous. Antennæ dark fuscous. Thorax blackish-fuscous with a few grey scales. Abdomen grey. Legs grey, irrorated with fuscous. Forewings elongate, costa gently arched, apex round-pointed, hindmargin obliquely rounded; whitish-grey irrorated with black scales; a black dot in disc at  $\frac{2}{3}$ ; an obscure, outwardly oblique, short, black marking from middle of inner-margin; beyond this is a small whitish-grey patch; a blackish suffusion at anal angle; cilia blackish-fuscous irrorated with whitish-grey. Hindwings with hindmargin sinuate beneath apex; pale-grey; cilia pale-grey.

Brisbane: five specimens at light.

## 6. *CRYPsICHARIS*, Meyr.

61. *CRYPsICHARIS NEOCOSMA*, Meyr. Meyrick, 45. Male and female, 17-23 mm.

Manly, near Brisbane, rather common; also from Charters Towers. From larvæ found by Mr. Illidge and Mr. Dodd spinning together leaves of *Eucalyptus*.

## 7. *ARIGNOTA*, n.g.

Head with appressed scales; ocelli absent; tongue well developed. Antennæ in male deeply serrated, moderately ciliated ( $\frac{2}{3}$ -1); basal joint somewhat swollen, without pecten. Labial palpi moderately long, curved, ascending, second joint with appressed scales, slightly rough beneath, terminal joint about half second, smooth, acute. Maxillary palpi very short. Thorax with a dense posterior crest. Abdomen rather stout. Anterior tarsi and tibiæ somewhat thickened with scales, middle tibiæ rough-haired above, posterior tibiæ densely rough-haired above and beneath. Forewings with vein 1 long-furcate towards base, 2 from  $\frac{3}{5}$ , 3 from angle, 3, 4, and 5 closely approximated at base, 7 and 8 stalked, 7 to apex, 11 from middle. Hindwings over 1, oblong-ovate, towards base below median and towards inner-margin densely clothed with long hairs, 3 and 4 short-stalked, 5 tolerably parallel, 6 and 7 separate but very closely approximated at base, 8 connected with cell near base.

A connecting link between *Lichenaula* and *Maroya*, but distinguished from both by the thoracic crest. From *Notosara*, Meyr., it is distinguished by the palpi.

62. *ARIGNCTA STERCORATA*, Lucas. (*Xylorycta stercorata*, Lucas, Proc. Linn. Soc. N.S.W. 1893, 164.) Male, 28-35 mm. Head, face, and palpi creamy-whitish. Antennæ white, gradually becoming fuscous towards apex. Thorax creamy-whitish, faintly reddish-tinged; posteriorly fuscous; a small slaty-grey spot on each shoulder. Abdomen whitish; second segment reddish-brown, overlapped by long whitish hairs from first segment; third, fourth, and fifth segments edged with reddish-brown. Legs whitish; anterior tibiæ and tarsi barred anteriorly by fuscous spots. Forewings oblong, costa rather strongly arched, apex obtuse, hindmargin not oblique, rounded towards anal angle; creamy-whitish, very faintly reddish-tinged; with slaty-grey spots; first faintly marked at base of costa; second beneath costa near base; third rather larger resting on fold at  $\frac{1}{6}$ ; fourth triangular at costa at  $\frac{2}{3}$  (this sometimes contains a fuscous dot); fifth on fold before middle; four spots in outer half of disc ranged in a circle, sometimes partly confluent; within the circle are two blackish dots placed transversely in disc at  $\frac{3}{5}$ ; a tenth spot on inner margin before anal angle; and an eleventh in disc at  $\frac{5}{6}$ ; a series of minute blackish dots parallel to hindmargin; an interrupted reddish-brown line along hindmargin; cilia reddish-brown, with a pale line at base and another at  $\frac{1}{3}$ . Hindwings whitish; cilia whitish, at apex fuscous.

Brisbane: several specimens from larvæ discovered by Mr. Illidge living in the stems of *Elæocarpus obovatus*, dragging in leaves for food.

## 8. MAROGA, Walk.

63. *MAROGA UNIPUNCTANA*, Don. (*Tortrix unipunctana*, Don, Ins. N. Holl.; *Maroga gigantella*, Walker, 827.) Meyrick, 40. Brisbane: larvæ feed on the bark of many different trees, spinning a web over the surface, and also tunnelling into the stem, which is frequently ring-barked. Found on various species of *Acacia*, *Jacksonia scoparia* (Dogwood), *Casuarina*, and probably other native trees. In gardens is very destructive to *Cassia* and many leguminous trees, and also some trees of other orders.

64. *MAROGA SETIOTRICA*, Meyr. Meyrick, 40. Charters Towers, Dawson River, and Duaringa: Mr. Dodd found the larva on *Acacia*.

65. *MAROGA UNDOSA*, Lucas. Proc. Linn. Soc. N.S.W. 1893, 164. I am not quite sure of the distinctness of this species from *Maroga mythica*, Meyr. The peculiar shape of the forewings is identical in both, though the coloration appears different. Brisbane: the larvæ discovered by Mr. Illidge feeding on the bark and tunnelling the stem of *Eugenia*.

## 9. COMPSOTORNA, Meyr.

66. *COMPSOTORNA OLIGARCHICA*, Meyr. Meyrick, 41. Described from a specimen taken at Toowoomba.



## 10. PHLOEOPHORBA, n.g.

Head with appressed scales; ocelli absent; tongue short. Antennæ moderate, in male filiform, simple, basal joint somewhat swollen, without pecten. Labial palpi moderately long, curved, ascending, second joint with appressed scales, slightly rough beneath, terminal joint nearly as long as second, smooth, acute. Maxillary palpi very short. Thorax smooth. Abdomen moderate. Anterior tibiæ somewhat thickened with scales, posterior tibiæ densely rough-haired above and beneath. Forewings with vein 1 long-furcate towards base, 2 from  $\frac{2}{3}$  to  $\frac{3}{4}$ , 3 from angle, 7 and 8 stalked, 7 to apex or costa, 11 from middle. Hindwings over 1, oblong-ovate, with a dense tuft of hairs near base below median, 3 and 4 from a point or short-stalked, 5 parallel, 6 and 7 from a point or short-stalked, 8 connected with cell at a point near base. Differs from *Maroga*, Meyr., in the absence of antennal ciliations in the male.

67. PHLOEOPHORBA CODONOPTERA, *n.sp.* Male, 25-35 mm. Female, 31-35 mm. Veins 3 and 4 of hindwings from a point, 6 and 7 from a point. Head, face, palpi, and antennæ dark fuscous. Thorax anteriorly fuscous, shading off posteriorly into reddish-ochreous. Abdomen ochreous-brown. Legs, anterior and middle pair reddish-fuscous, posterior ochreous-whitish; anterior coxæ shining white. Forewings moderate, costa strongly arched in female, in male this is exaggerated, apex produced into a finger-shaped process with rounded extremity, hindmargin sinuate, very oblique; shining ochreous-whitish; in female shining reddish-ochreous; edges of costa and inner-margin orange, at base of costa fuscous; a white spot margined with fuscous in disc at  $\frac{2}{3}$ ; in male this may be partially obsolete; traces of fuscous suffusion about all margins and apex; costal cilia orange, hind-marginal fuscous. Hindwings ochreous-whitish; cilia ochreous-whitish, at apex pale fuscous.

The very peculiar forewings distinguish this from any other known species. Brisbane: larvæ found abundantly feeding on the bark of *Elæocarpus grandis* (Quandong), and *Eugenia ventenatii*, under roundish blotches composed of silk and fragments of bark, in the centre of which the pupæ may be found in a separate chamber.

68. PHLOEOPHORBA LACTEA, *n.sp.* Female, 22-29 mm. Veins 3 and 4 of hindwings short-stalked, 6 and 7 from a point. Head and face dark fuscous. Palpi dark fuscous; terminal joint whitish except at base. Antennæ dark fuscous. Thorax white. Abdomen whitish, obscurely annulated with reddish-brown. Legs, anterior and middle pair fuscous, posterior pair ochreous-whitish; anterior coxæ white. Forewings moderate, costa rather strongly arched, apex obtuse, hindmargin slightly rounded, very oblique; uniform milky-white, without markings; a very faint indication of pale fuscous suffusion towards hindmargin; cilia white. Hindwings white; a very faint indication of pale fuscous suffusion towards apex; cilia white.

In the absence of the male the generic position of this species cannot be determined with certainty. Charters Towers: two female specimens received from Mr. Dodd.

## 11. PLECTOPHILA, Meyr.

69. PLECTOPHILA ELECTELLA, Walk. (*Oecophora electella*, Walker, 679; *Plectophila electella*, Meyrick, 55.) Gympie: one specimen taken by Mr. Illidge.

70. PLECTOPHILA PYRGODES, *n.sp.* Female, 18 mm. Head and face snow-white. Palpi white; terminal joint pale fuscous towards apex. Antennæ fuscous. Thorax, anterior half snow-white, posterior dark fuscous. Abdomen pale ochreous. Legs pale ochreous. Forewings elongate, costa scarcely arched, apex round-pointed, hindmargin oblique, slightly sinuate; white; markings ochreous-fuscous; costal edge fuscous at extreme base; a broad streak along inner margin from  $\frac{1}{4}$  to anal angle; from this arises a broad transverse bar crossing disc at  $\frac{1}{3}$ , ceasing abruptly at  $\frac{1}{3}$  breadth of wing from costa; a very broad fascia from costa beyond middle to anal angle, both margins irregularly dentate; a dark-fuscous longitudinal streak at apex, attenuated anteriorly; between this and costa an ochreous-brown area with two white dots on costa; hindmarginal part of disc irrorated with fuscous; cilia white, a median fuscous line at apex, at anal angle slightly ochreous-tinged. Hindwings dark-grey; cilia ochreous-whitish.

Probably attached to *Acacia*. Brisbane: one specimen.

## 12. NEODREPTA, n.g.

Head with loosely appressed scales; ocelli absent; tongue well developed. Antennæ moderate, in male with moderate or rather long ciliations (1-2), basal joint moderate, without pecten. Labial palpi moderate, curved, ascending, second joint with appressed scales, terminal joint shorter than second, acute. Maxillary palpi very short. Thorax smooth. Abdomen moderate. Posterior tibiæ rough-haired above and beneath. Forewings with vein 1 long-furcate towards base, 2 from  $\frac{2}{3}$  to  $\frac{3}{4}$ , 3 from angle, 7 and 8 stalked, 8 to hindmargin, 11 from middle. Hindwings 1 or over 1, oblong-ovate, towards base below median, and towards inner-margin densely clothed with long hairs, 3 and 4 from a point, 5 parallel, 6 and 7 separate but closely approximated at base, 8 connected with cell at a point towards base.

Distinguished from all except the following genus by the termination of vein 8 of forewing below apex.

71. NEODREPTA LUTEOTACTELLA, Walk. (*Cryptolechia luteotactella*, Walker, 750; *C. cognatella*, ib. 751; *Xylorycta luteotactella*, Meyrick, 61.) Brisbane: Mr. Illidge finds the larvæ usually between spun-together leaves of *Banksia integrifolia*, occasionally tunnelling the smaller stems. Also from Ballandean (2,500 feet) near Wallangarra.

72. NEODREPTA APHELES, *n. sp.* Male, 22 mm. Antennal ciliations, 1. Head, face, and palpi snow-white. Antennæ white at base, shading into fuscous towards apex. Thorax white, posteriorly slaty-grey. Abdomen grey, tuft ochreous-grey. Legs white; anterior pair, except coxæ, fuscous. Forewings dilated posteriorly, costa gently arched, apex round-pointed, hindmargin straight, slightly oblique; whitish-grey, sparsely irrorated with grey; costal edge

fuscous at base, thence ochreous-whitish almost to apex; an ill-defined grey triangular blotch on centre of inner-margin, its oblique posterior edge very distinct; an ill-defined greyish line from costa at  $\frac{3}{4}$  to before anal angle, gently outwardly curved in disc; cilia pale fuscous. Hindwings and cilia grey.

Mount Tambourine: one specimen at light in December. The type is somewhat worn.

### 13. PARALECTA, n.g.

Head with loosely appressed scales; ocelli absent; tongue short. Antennæ moderate, in male very shortly ciliated ( $\frac{1}{5}$ ), basal joint moderate, without pecten. Labial palpi moderate, curved, ascending, second joint with appressed scales, slightly roughened beneath, terminal joint shorter than second, acute. Maxillary palpi very short. Thorax smooth. Abdomen moderate. Posterior tibiæ rough-haired above and beneath. Forewings with vein 1 long-furcate towards base, 2 from  $\frac{2}{3}$ , 3 from angle, 7 and 8 stalked, 8 to hindmargin, 11 from middle. Hindwings 1, oblong-ovate, towards base below median, and towards inner-margin densely clothed with long hairs, 3 and 4 stalked, 5 parallel, 6 and 7 stalked, 8 connected with cell at a point near base.

Distinguished from the preceding by the stalking of veins 6 and 7 of the hindwings.

73. PARALECTA TINCTORIA, Lucas. (*Xylorycta tinctoria*, Lucas, Proc. Linn. Soc. N.S.W. 1893, 163.) Male and female, 21-23 mm. Head, face, and palpi white. Antennæ whitish, becoming fuscous towards apex. Thorax white, shading into pale fuscous posteriorly. Abdomen whitish. Legs whitish. Forewings much dilated posteriorly, costa gently arched, apex round-pointed, hindmargin straight, slightly oblique; whitish, irrorated with reddish-brown scales; towards costa and hindmargin mostly free from irroration; a conspicuous but ill-defined reddish-brown blotch on inner margin before middle; cilia reddish-brown, bases whitish, with a fuscous line at  $\frac{1}{3}$ , at anal angle whitish. Hindwings white; with a narrow grey line along margin; cilia white, with a faint greyish median line.

Brisbane: five specimens beaten from *Eugenia ventenatii*.

### 14. SCIEROPEPLA, Meyr.

74. SCIEROPEPLA POLYXESTA, Meyr. Meyrick, 67. Ballandean (2,500 feet) near Wallangarra: one specimen in February.

75. SCIEROPEPLA REVERSELLA, Walk. (*Cryptolechia reversella*, Walker, 752; *C. abrosella*, i.b., 752.) Meyrick, 68. Wynnum, near Brisbane: seven specimens from larvæ feeding gregariously in a *Banksia* cone.

### 15. CATORYCTIS, Meyr.

Antennæ of male filiform, simple. Meyrick describes the antennæ of male as shortly ciliated ( $\frac{1}{4}$ - $\frac{1}{2}$ ), but I have always found a total absence of cilia. In the forewings vein 7 is absent (coincident with 8) in *mediolinea* and *subparallela*, present in all the other species.

1. Forewings with a conspicuous white  
median streak ... .. 2.

Forewings without a conspicuous white  
median streak ... .. 80 *nonolinea*.



2. Median streak reaching to apex ... 3.  
 " " not reaching to apex... 76 *mediolinea*.  
 3. Median streak interrupted transversely 78 *eugramma*.  
 " " not interrupted trans-  
 versely ... 4.  
 4. Hindwings whitish-ochreous ... 77 *subparallela*.  
 " grey ... 79 *tricrena*.

76. CATORYCTIS MEDIOLINEA, *Lucas*. Proc. Linn. Soc. N.S.W. 1893, 166. Male, 23 mm. Forewings with vein 7 absent. A fine species, easily recognisable by the single broad white median streak not reaching apex. Brisbane: one specimen taken by Mr. Illidge.

77. CATORYCTIS SUBPARALLELA, *Walk.* (*Oecophora subparallela*, Walker, 690; *Oec. newella*, ib., 692; *Oec. fissulella*, ib., 1032; *Catoryctis subparallela*, Meyrick, 42.) Brisbane.

78. CATORYCTIS EUGRAMMA, *Meyr.* Meyrick, 43. Brisbane.

79. CATORYCTIS TRICRENA, *Meyr.* Meyrick, 44. *Var. Brisbaneensis*. Differs from the typical form in the presence of an additional white streak close to inner-margin from base to anal angle.

Brisbane.

80. CATORYCTIS NONOLINEA, *Lucas*. Proc. Linn. Soc. N.S.W. 1893, 165. Male and female, 13-15 mm. Forewings with vein 7 present. Head and face white. Palpi white; terminal joint pale fuscous. Antennæ white, sharply annulated with dark fuscous. Thorax ochreous-brown, with three longitudinal white lines. Abdomen ochreous-whitish. Legs ochreous-whitish; anterior pair infuscated. Forewings moderate, costa gently arched, apex rounded, hindmargin obliquely rounded; ochreous-brown, with numerous fine white lines; costal edge fuscous at extreme base; a subcostal line from base to middle of costa; a median line from base, bifurcating at  $\frac{1}{5}$ , upper limb reaching  $\frac{2}{5}$ , lower limb along fold, parallel and equal to upper limb; an inner marginal line commencing at  $\frac{1}{5}$  and reaching margin just before anal angle; four streaks parallel to veins running to costa; a second short median line from middle of disc, ending in a white spot at  $\frac{4}{5}$ ; four fine short streaks parallel to hindmarginal veins; an irregular white spot close to inner-marginal line near its termination; cilia whitish, extremities brownish. Hindwings in male white with a sharply defined dark-grey patch at apex; in female grey, darker at apex; cilia white.

Brisbane: two specimens taken by Mr. Illidge.

## 16. ILLIDGEA, n.g.

Head with appressed scales; ocelli absent; tongue moderate. Antennæ moderate, in male rather stout, not ciliated; basal joint moderate, without pecten. Labial palpi moderately long, curved, ascending; second joint with appressed scales; terminal joint much shorter than second, acute. Maxillary palpi very short. Thorax smooth. Abdomen rather stout. Posterior tibiæ densely rough-haired above and beneath. Forewings with vein 1 long-furcate towards base, 2 from  $\frac{3}{5}$ , 3 from angle, 7 and 8 stalked, 7 to hindmargin, 11 from  $\frac{1}{4}$ . Hindwings over 1, oblong-ovate; towards base

below median, and towards inner-margin densely clothed with long hairs; 3 and 4 short-stalked, 6 and 7 separate but closely approximated at base, 8 connected with cell at a point near base.

Distinguished from *Xylorycta* and *Lichenaula* by the antennæ of the male. I have great pleasure in naming this genus after my friend Mr. R. Illidge, to whom our knowledge of this group owes so much.

81. *ILLIDGEA EPIGRAMMA*, *Meyr.* (*Cryptophaga epigramma*, Meyrick, 31; *Xylorycta epigramma*, Lower, Proc. Roy. Soc. S.A. 1894, 91.) Male, 26-32 mm. Female, 30-40 mm. A very variable species. The variation consists partly in the greater distinctness and number of the transverse black lines, in particular one from costa at  $\frac{2}{3}$  to before anal angle, angulated in disc, is often present; partly also in the presence of conspicuous squarish whitish blotches in middle of disc and at anal angle. A very distinct variety has a conspicuous longitudinal black streak from first transverse line to hindmargin.

Brisbane: Mr. Illidge has found the larvæ abundantly on the trunks, or larger branches, of several species of *Eucalyptus*, usually tunnelling the young wood on the edge of a fractured branch, or some other injury. Also three specimens from Charters Towers, bred by Mr. Dodd. These are much smaller (23-26 mm.) than the Brisbane types, and have paler hindwings.

## 17. MYLOCERA, n.g.

Head smooth; ocelli absent; tongue developed. Antennæ moderate, in male much thickened with scales towards base, not ciliated, basal joint short, without pecten. Labial palpi short, curved, ascending, second joint rough-scaled anteriorly, terminal joint less than half second, acute. Maxillary palpi very short. Thorax smooth. Abdomen stout. Posterior tibiæ shortly rough-haired above, smooth beneath. Forewings with vein 2 from  $\frac{2}{3}$ , 3 from angle, 7 and 8 stalked, 7 to hindmargin immediately below apex, 11 from middle. Hindwings over 1, oblong-ovate, inner-margin hairy, 3 and 4 from a point, 5 parallel, 6 and 7 short-stalked.

A very distinct genus, immediately distinguished by the peculiar antennæ of the male.

82. *MYLOCERA TENEBRIFERA*, *n.sp.* Male, 18 mm. Head, face, palpi, antennæ, thorax, and abdomen uniform glossy black. Legs black; anterior and middle tarsi annulated with white. Forewings posteriorly dilated, costa straight, apex rounded, hindmargin straight, slightly oblique; black; sparsely irrorated with pearly-white scales; cilia black with a bluish-purple lustre. Hindwings dark fuscous; towards base free from scales and transparent, except along veins; cilia fuscous, at apex black with purplish lustre.

A very extraordinary species in general appearance. Brisbane: one specimen taken by Mr. Illidge.

## 18. GONIOMA, n.g.

Head with loosely appressed scales; ocelli absent; tongue developed. Antennæ moderate, in male filiform, simple, basal joint moderate, without pecten. Labial palpi moderate, curved, ascending, second joint thickened with rough scales towards apex, terminal joint



shorter than second, smooth, slender, acute. Maxillary palpi very short. Thorax smooth. Abdomen moderate. Posterior tibiæ rough-haired above in male, smooth beneath. Forewings with costa strongly arched at base, vein 2 from  $\frac{3}{5}$ , 3 from angle, 7 and 8 stalked, 7 to costa, 11 from middle. Hindwings over 1, oblong-ovate, with a tuft of hairs from base below median, 3 and 4 short-stalked, 5 parallel, 6 and 7 separate but closely approximated at base, 8 connected with cell near base.

A peculiar genus, interesting as forming to some extent a connecting link between *Lichenaula* and *Uzucha*.

83. *GONIOMA XANTHOPSIS*, *n. sp.* Male, 33-35 mm. Head and face whitish-grey. Palpi whitish, with a few fuscous scales. Antennæ whitish-grey. Thorax whitish-grey, irrorated with fuscous. Abdomen ochreous. Legs ochreous; anterior pair whitish, anterior tarsi fuscous. Forewings oblong, costa very strongly and abruptly arched near base, thence moderately arched, apex rounded, hindmargin very obliquely rounded; whitish-grey, sparsely irrorated with blackish scales; cilia whitish-grey. Hindwings ochreous-yellow; with a pale fuscous suffusion at apex; cilia pale fuscous, with darker line at  $\frac{2}{3}$  towards anal angle ochreous-yellow.

Charters Towers: two specimens, obtained by Mr. Dodd from larvæ feeding under a web on the bark of a Myrtaceous tree.

#### 19. UZUCHA, Walk.

Labial palpi short or moderate. Posterior tibiæ in male smooth-scaled, in female rough-scaled above, smooth beneath. Forewings with vein 7 to apex or costa. Hindwings with 6 and 7 from a point or short-stalked.

It seems better for the present to widen the definition of this genus than to establish a new genus for Lower's species.

84. *UZUCHA HYPOXANTHA*, *Lower*. Proc. Roy. Soc. S.A. 1894., 88. Female, 40 mm. Forewing with vein 7 to costa. Hindwings with 6 and 7 from a point. Chinchilla, Western Darling Downs: one specimen (Coll. Brisbane Museum). Lower also records it from near Duaringa.

85. *UZUCHA HUMERALIS*, *Walk.* Walker, 826; Meyrick, 26. Male and female, 42-53 mm. (one specimen, probably starved, 35 mm.). Palpi very short. Forewings with vein 7 to apex. Hindwings with 6 and 7 stalked. Brisbane: larvæ found very commonly feeding under a web on the bark of *Angophora* and smooth-barked species of *Eucalyptus*. Also recorded from Duaringa.

86. *UZUCHA BOREALIS*, *n. sp.* Male, 47 mm. Palpi very short. Forewings with vein 7 to apex. Hindwings with 6 and 7 stalked. Head, face, and palpi deep orange-ochreous. Antennæ pale ochreous-brown, annulated with darker brown. Thorax pale ochreous-brown. Abdomen dark-fuscous, base of segments and two whole apical segments ochreous-orange. Legs ochreous-orange; anterior pair infuscated. Forewings oblong, slightly narrowed posteriorly, costa very strongly and abruptly arched near base, thence nearly straight, apex obtuse, hindmargin nearly straight, hardly oblique; pale ochreous-brown; a semi-circular dark reddish-fuscous spot on base of costa; a conspicuous squarish

reddish-fuscous spot in disc at  $\frac{2}{3}$ ; cilia pale ochreous-brown. Hindwings pale ochreous; basal third fuscous; division suffused; cilia pale ochreous, at anal angle fuscous.

Differs from *Uzucha humeralis* only in the colouration. Further discoveries may show that it is only a geographical variety of this species, which, however, is quite constant in its colouring in the neighbourhood of Brisbane. Charters Towers: one specimen from Mr. Dodd.

## 20. PROCOMETIS, Meyr.

An interesting genus probably destined to be much increased in number of species.

I have omitted *Proc. diplocentra*, Meyr., 73, as of doubtful occurrence in Queensland. I have seen no specimens from this colony, and have one captured during a short stay in Hobart, Tasmania. As Mr. G. Barnard, from whom the type specimens were received, is known to have collected in this island, I think there may be some mistake in the locality, which is given as Duaringa.

The following is a tabulation of the Queensland species:—

- |   |        |                       |
|---|--------|-----------------------|
| 1. Forewings with fuscous streaks along veins | ... .. | 87 <i>phloxodes</i> . |
| Forewings without fuscous streaks along veins | ... .. | 2.                    |
| 2. Forewings partly yellowish                 | ... .. | 89 <i>lipara</i> .    |
| „ fuscous or grey, not yellowish              | ... .. | 3.                    |
| 3. Apex of forewings dark fuscous             | ... .. | 88 <i>melanthes</i> . |
| „ not dark fuscous                            | ... .. | 4.                    |
| 4. Forewings grey, apex acute                 | ... .. | 90 <i>hylonoma</i> .  |
| „ apex obtuse                                 | ... .. | 91 <i>acompsa</i> .   |

87. PROCOMETIS PHLOEODES, *n. sp.* Male, 25-27 mm.; female, 30-34 mm. Head and face whitish-grey. Palpi, second joint whitish with two longitudinal fuscous streaks anteriorly, terminal joint fuscous, apex whitish. Antennæ fuscous, with a few whitish scales. Thorax fuscous, with a few whitish scales. Abdomen ochreous-fuscous, apices of segments whitish. Legs whitish; anterior tarsi with fuscous annulations. Forewings elongate, costa moderately arched, apex rounded, hindmargin obliquely rounded; whitish; all veins outlined in fuscous; a more or less obsolete, interrupted fuscous line from base to hindmargin; cilia whitish, barred with fuscous. Hindwings fuscous; cilia whitish, with a fuscous basal line. Brisbane: five specimens.

88. PROCOMETIS MELANTHES, *n.sp.* Male, 30 mm. Head and face blackish-fuscous. Palpi blackish-fuscous; second joint irrorated with white scales, and with two longitudinal white lines anteriorly; apex of terminal joint whitish. Antennæ black. Thorax blackish-fuscous. Abdomen fuscous; apices of segments whitish. Legs whitish, irrorated with fuscous scales; anterior pair blackish-fuscous, tibiæ irrorated, and tarsi annulated with white. Forewings elongate, costa moderately arched, apex rounded, hindmargin obliquely rounded; blackish-fuscous irrorated with whitish scales. The absence of these leaves the following markings:—A short longitudinal line from base;

an indistinctly double spot in disc before middle, placed obliquely; a closely similar spot in disc beyond middle; a blackish area at apex sharply bounded internally, division starting from costa at  $\frac{3}{4}$ , sharply bent inwards in disc to form a sharp process, thence outwardly curved to anal angle; cilia alternately blackish-fuscous and whitish. Hindwings fuscous; paler towards base; cilia paler, with a darker basal line.

Ballandean (2,500 feet), near Wallangarra: one specimen in February.

89. *PROCOMETIS LIPARA*, *Meyr.* Meyrick, 72. Ballandean (2,500 feet), near Wallangarra: one specimen in February.

90. *PROCOMETIS HYLONOMA*, *Meyr.* Meyrick, 72. Stradbroke Island: one specimen in November.

91. *PROCOMETIS ACOMPSA*, *n.sp.* Male, 20 mm. Head, face, palpi, and antennæ whitish-grey. Thorax grey; anterior margin and shoulders whitish-grey. Abdomen dark ochreous-fuscous; apices of segments whitish-ochreous. Legs whitish; anterior pair infuscated. Forewings narrow-elongate, costa slightly arched, apex very obtusely rounded, hindwings very oblique, scarcely rounded; pale whitish-grey irrorated with darker grey; an ill-defined whitish streak along costa to  $\frac{3}{4}$ ; cilia whitish-grey. Hindwings and cilia dark-grey.

Best distinguished from the preceding by the shape of the forewings. Brisbane: one specimen in November.

## 21. *PHYLOMICTIS*, *Meyr.*

A very interesting genus, being probably a remnant of a very ancient group, of which the majority are now extinct. It forms, as Meyrick remarks, an important connecting link between *Agriophara* and the rest of the family.

The present species presents slight differences from Meyrick's type, which are noted below, but not sufficient to separate it from his genus.

92. *PHYLOMICTIS PALAEOMORPHA*, *n.sp.* Male, 15-18 mm. Forewings with vein 7 and 8 very short-stalked, 7 to costa. Hindwings with 3 and 4 extremely long-stalked. Head grey-whitish, with fuscous irroration. Face and palpi whitish. Antennæ grey. Thorax grey-whitish, irrorated with fuscous. Abdomen grey. Legs whitish; anterior pair infuscated. Forewings narrow-elongate, costa strongly arched, apex rounded, hindmargin very obliquely rounded; whitish, thickly irrorated with fuscous between veins; costal edge whitish; cilia whitish. Hindwings and cilia grey.

An inconspicuous species, easily overlooked, resembling in general appearance an *Agriophara*. Brisbane: two specimens in November. From its general appearance I conclude that it frequents bark.

## 22. *AGRIOPHARA*, *Ros.*

The following is a tabulation of the Queensland species:—

- |                                     |        |                      |
|-------------------------------------|--------|----------------------|
| 1. Forewings with brownish blotches | ... 93 | <i>confertella</i> . |
| " without brownish blotches         | 2.     |                      |
| 2. Forewings blackish               | ... 96 | <i>cremnoptis</i> .  |
| " grey or whitish                   | ... 3. |                      |



3. Forewings with a short oblique streak from base of costa ... 4.  
 Forewings without a short oblique streak from base of costa... 5.  
 4. Forewings with an interrupted longitudinal streak in disc ... 94 *cinerosa*.  
 Forewings with an oblique fascia before middle ... 98 *plagiosema*.  
 5. Forewings whitish, with a pale fuscous fascia before middle ... 97 *leucanthes*.  
 Forewings grey ... 6.  
 6. Hindwings of male whitish anteriorly, fuscous towards apex ... 99 *fascifera*.  
 Hindwings uniformly whitish-grey ... 95 *poliopepla*.

93. AGRIOPHARA CONFERTELLA, *Walk.* (*Cryptolechia confertella*, Walker, 758; *Agriophara confertella*, Meyrick, 76.) Brisbane: taken mostly at light.

94. AGRIOPHARA CINEROSA, *Ros.* Ann. Mag. Nat. Hist. 1885, 439. Brisbane.

95. AGRIOPHARA POLIOPEPLA, *n. sp.* Male and female, 16-22 mm. Head grey. Face and palpi whitish. Antennæ grey. Thorax grey. Abdomen whitish-grey. Legs whitish; anterior pair annulated with fuscous. Forewings narrow-elongate, costa moderately arched, apex rounded, hindmargin very obliquely rounded; grey densely irrorated with whitish scales; markings grey rather obscure; a dot on costa at  $\frac{1}{4}$ , from which proceeds an outwardly oblique series of dots, the last on fold; a dot on costa at  $\frac{2}{5}$ , from which extends a second outwardly oblique series of dots ending in a larger dot in disc at  $\frac{3}{5}$ ; a third series of dots from costa at  $\frac{3}{5}$ , parallel to hindmargin to before anal angle; cilia whitish-grey, basal third irrorated with pale fuscous. Hindwings whitish-grey; cilia whitish.

From *Agriophara gravis*, *Meyr.*, it may be distinguished by the absence of blackish scales. Brisbane: four specimens in September.

96. AGRIOPHARA CREMNOPIS, *Lower.* Lower Proc. Roy. Soc. S.A. 1894, 93. I do not know this species. The type is stated to be from Duaringa.

97. AGRIOPHARA LEUCANTHES, *n. sp.* Male, 14-16 mm. Head and face whitish. Palpi whitish; outside of terminal joint fuscous. Antennæ whitish. Thorax whitish, irrorated with fuscous. Abdomen grey. Legs whitish; anterior pair somewhat infuscated. Forewings oblong, costa rather strongly arched, apex rounded, hindmargin very obliquely rounded; whitish; markings pale fuscous; base of costa fuscous; an obscure fascia near base; a secondly outwardly curved fascia from costa at  $\frac{1}{5}$  to middle of inner margin; a darker spot on costa at  $\frac{2}{5}$ ; a suffused interrupted fascia from costa at  $\frac{3}{5}$  to anal angle; a series of dots tending to form a third fascia from costa at  $\frac{4}{5}$  parallel to hindmargin to anal angle; cilia whitish barred with fuscous. Hindwings and cilia whitish-grey.

Apparently nearest *Agriophara horridula*, *Meyr.* Brisbane: Two specimens.

98. *AGRIOPHEARA PLAGIOSEMA*, *n. sp.* Male and female, 16-18 mm. Head, face, and palpi whitish, irrorated with grey. Antennæ grey. Thorax whitish, irrorated with grey. Abdomen ochreous-whitish. Legs whitish; anterior pair fuscous. Forewings elongate, costa rather strongly arched, apex rounded, hindmargin very obliquely rounded; whitish, irrorated with grey and with a few blackish scales; markings blackish; very short oblique streak from base of costa; a conspicuous oblique fascia from costa at  $\frac{1}{3}$  to middle of inner margin, often partly obsolete towards either margin; a short oblique streak from middle of costa, sometimes continued by a series of dots to a blackish suffusion above anal angle, which is, however, frequently obsolete; a series of dots parallel to hindmargin, frequently partly obsolete; cilia whitish, irrorated with grey and blackish scales. Hindwings and cilia grey.

Readily distinguished by the oblique anterior fascia. Brisbane: four specimens in October.

99. *AGRIOPHARA FASCIFERA*, Meyr. Meyrick, 80. Male and female, 12-16 mm. Brisbane: not uncommon.

## ADDENDUM.

It seems convenient to describe here the following species; although, not being a Queensland insect, so far as is known, it does not come strictly within the scope of this paper:—

*AGRIOPHARA DISCOBOLA*, *n. sp.* Male and female, 25-28 mm. Head pale fuscous with whitish irroration; face whitish. Palpi dark fuscous irrorated with whitish. Antennæ fuscous-grey; in male showing whitish annulations. Thorax fuscous with whitish irroration. Abdomen grey. Legs whitish; anterior pair fuscous. Forewings elongate-oblong, costa moderately arched, apex rounded, hindmargin obliquely rounded; whitish densely irrorated with grey, and with some blackish scales; a well-marked irregular streak from base of costa along fold to beyond middle of disc; immediately beyond this a circular brownish spot in disc at  $\frac{2}{3}$ , edged posteriorly with blackish; an oblique interrupted line from costa at  $\frac{1}{4}$  to central streak; and another more obscure from costa at  $\frac{2}{3}$ ; a circularly curved row of blackish dots in disc beyond brownish spot; cilia grey irrorated with whitish, basal half barred with fuscous. Hindwings dark-grey; cilia grey with a darker basal line.

A very distinct species allied to *Agr. confertella*, Walk. Several specimens received from Mr. G. Lyell, taken at Gisborne, Victoria, in February.



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OF THE

## QUEENSLAND MUSEUM.

No. 5.

By C. W. DE VIS, M.A., DIRECTOR.

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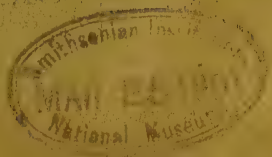
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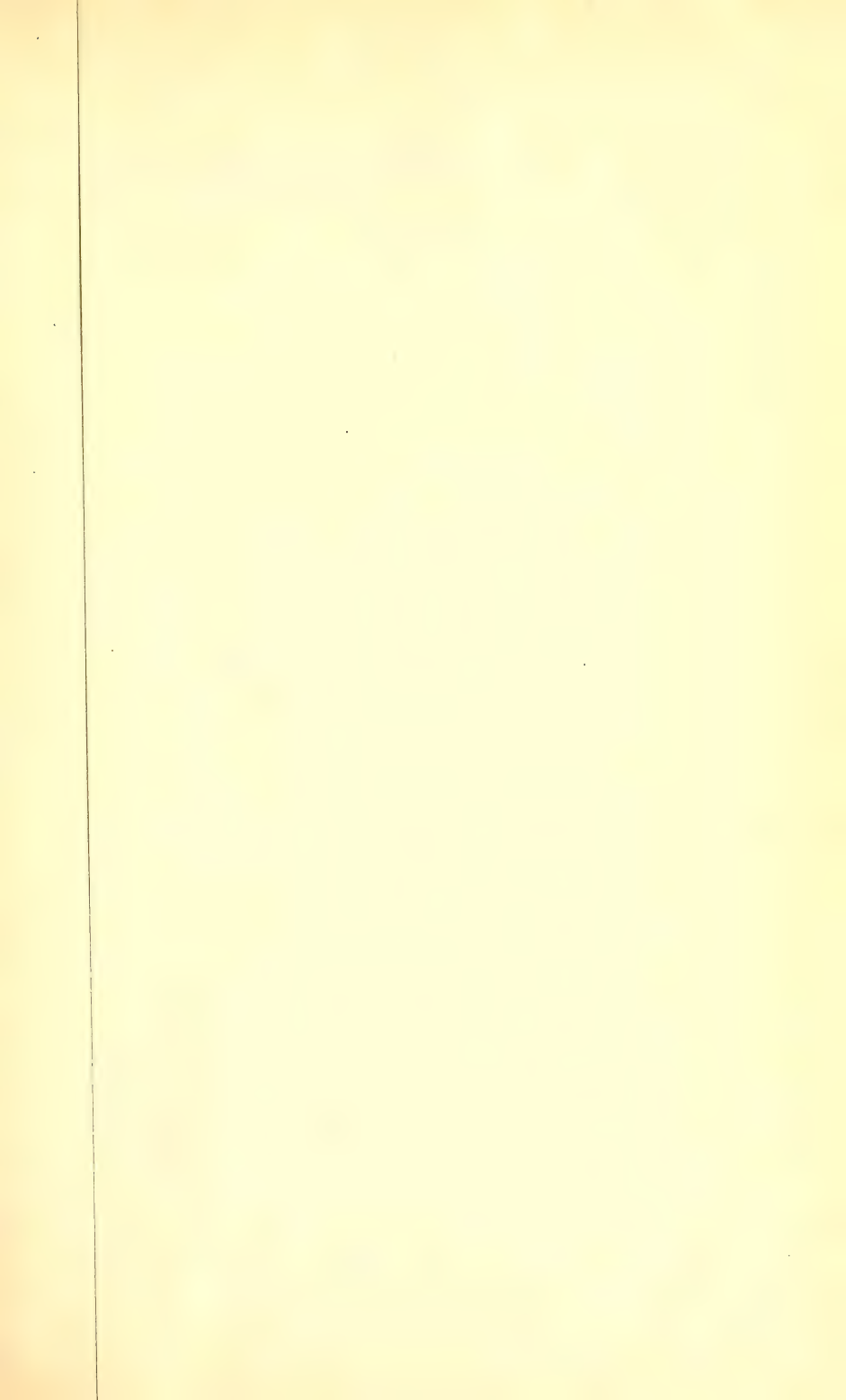
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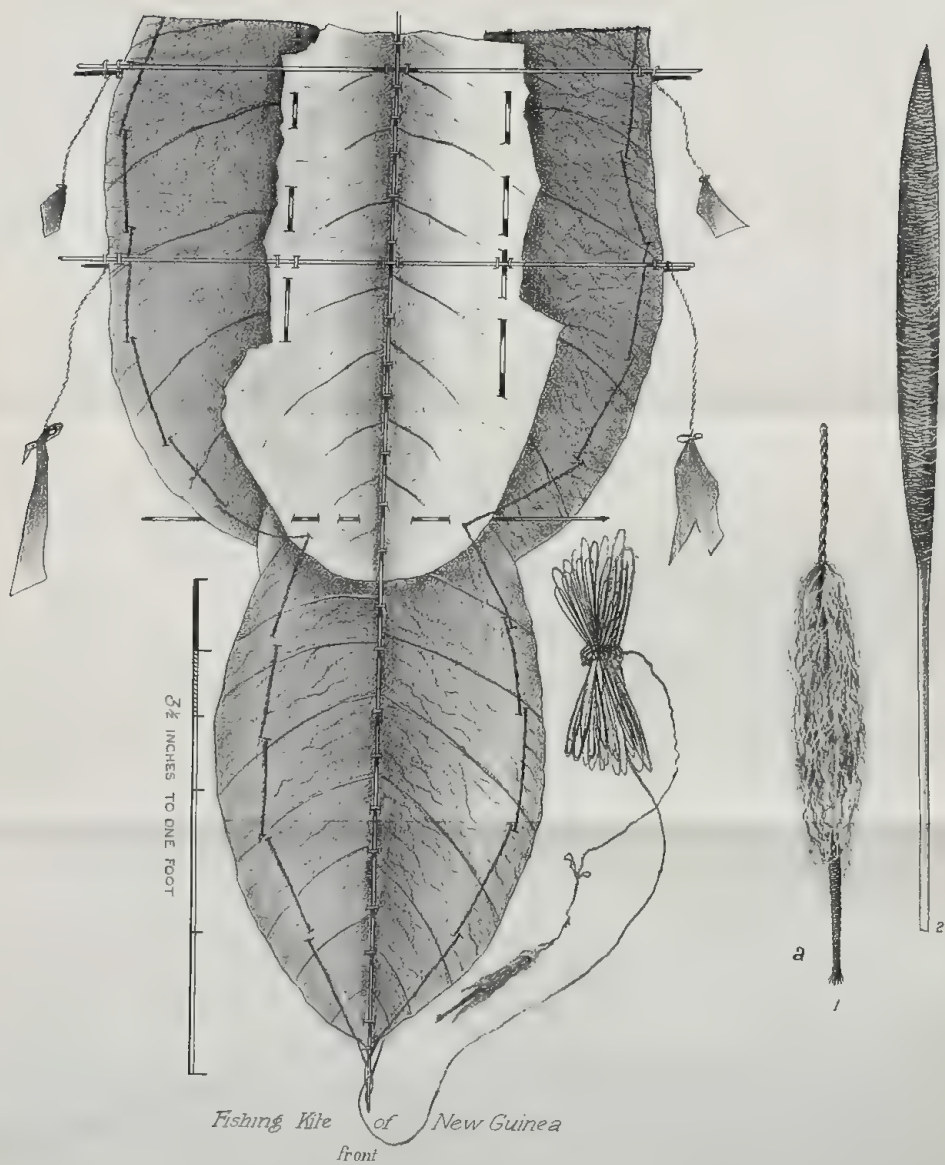
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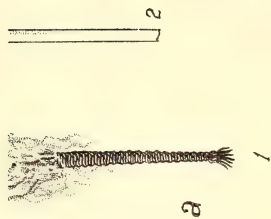
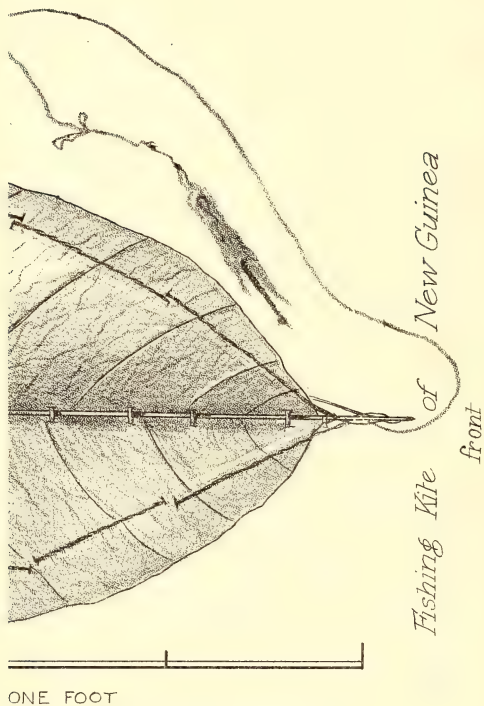
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Pl. I





## OCCASIONAL NOTES.

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### A PAPUAN KITE.

THE late Lieutenant Governor of British New Guinea, Sir William Macgregor, enhancing, as usual with him, the value of his Annual Report to the Queensland Government for the year 1897-8 by recording in it much that is of scientific interest, teaches us, among other things ethnological, the construction and purpose of a kite which he found in use at Dobu, one of the islands of the d'Entrecasteaux group on the east coast. Had these Reports the circulation which, in the interest of ethnology and geography, should by all means be given to them, it would be simply an impertinence in anyone to reproduce their author's information on this or any subject, but, unfortunately, they are but little known outside the pale of officialdom. It therefore occurs to the writer that since he has it in his power to make this odd bit of untutored cunning more widely known by distributing, with a few explanatory remarks, a surplus store of the drawings of it which were prepared under his direction for the Report aforesaid, it is almost imperative upon him to take the first opportunity of doing so.

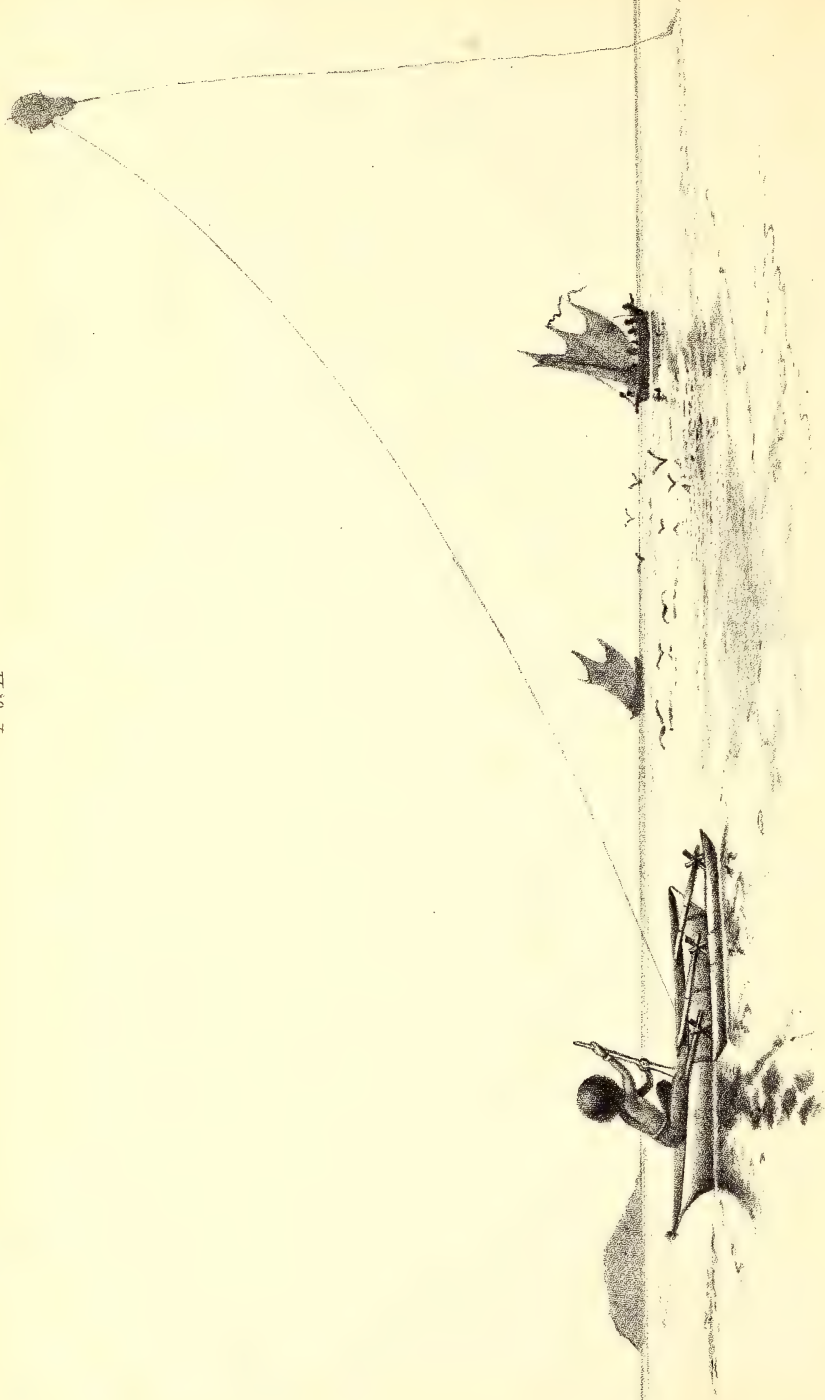
It appears that the voyager among these islands may occasionally see, and not without surprise, a number of canoes dotting the sea, each tenanted by a single native who is apparently intent upon the amusement of flying a little kite over the surface of the water. If his first thought should be the very natural one that he has here met with an instance of the use of one of the toys of his youth among grown-up savages, illustrating the doctrine that the uncivilised adult remains mentally very much on the level of civilised childhood, he will, to his further astonishment, find on inquiry that the Papuan is not as a child flying his kite for amusement, but for the very practical purpose of catching fish. How he manages to catch fish by means of a kite is open to explanation; by what course of "applied science" he was led to find that he could do so is a piece of knowledge which, perhaps, has slipped irrevocably behind the veil of oblivion. We might be content to say that it is done by means of a piece of cobweb attached to the tail of the kite, but the structure of the whole apparatus is of sufficient interest to warrant a fuller description of its parts.

All the kites referred to in Sir W. Macgregor's Report are approximately of the form depicted on Plate 1, and of the size indicated by the scale beside the figure. Each is composed of three large flat leaves of a tree which the Colonial Botanist, Mr. Bailey, is disposed to identify with *Morinda citrifolia*. Its basal and narrower portion consists of a single leaf placed stalk downwards, truncated at the apex, and here overlapped by the apical end of a second leaf, which is in its turn truncated at the base in order to form part of the upper

edge of the kite. The third leaf is split down the middle, and each half is applied point downwards by an overlapping edge to a side of the second leaf to extend the lateral area to be presented to the wind, and, at its base, shorn off to preserve the horizontality of the upper edge, in which respect mainly the general form of the kite differs from that familiar to ourselves. The overlapping edges are "basted" together by passing through both of them at wide intervals, one of the long slender strips split from the leaf of a species of palm for which the natives find various other uses. The rigidity of the whole structure so fashioned is increased by the application of other strips of the same material—one passing down the centre and lashed to the contiguous midribs of the leaves; a pair on each side of and securing between them the upper edge of the fabric; another pair strengthening in a similar manner the mid line of its upper division; a single strip threaded through the leaf at the base of that division; and another across the middle of the lower division, the last being fixed merely by passing it between the midrib and the central longitudinal strip. The lateral edges of the kite are strengthened throughout by a double stitch of twine inserted well within the margin. When complete the kite is provided with five "wings." These are short strips of pandanus leaf, sometimes swallow-tailed at the free end, attached by a piece of twine, from 70 to 80 mm. in length, to each end of the pair of upper cross stretchers and to the top of the middle longitudinal one. The kites vary in length from 560 to 720 mm., and in greatest breadth from 200 to 290 mm. The flight-line is a two-strand fibre seining twine (as a seaman describes it), each strand composed of about 20 fibres, neatly spun, very light and strong, and long enough ("not less than a fourth or even a third of a mile in length," says our authority) to allow the kite to rise to the proper height at the distance desired. This line is tied to the central stretcher at its mid point with a knot within which is included a little roll of leaf (perhaps for luck), and with a loose end left long enough to reach to the bottom of the kite where it is again tied. The rest of the flight-line is, when unemployed, wound round a chunk or flat piece of wood, in the latter case more or less battledore shaped. Instead of a tail of the ordinary length is attached another very long line ("from one to three hundred yards in length") of similar twine; this ends below in a peculiar tassel, and it is by virtue of this tassel that the kite becomes a piscatorial engine of a novel kind.

The araneifauna of New Guinea contains a spider which, like that spoken of by Layard ("Nature," 1879, p. 456) in a note on the origin of the night-cap-like bags of New Caledonia, "produces a very strong web." Neither the spider nor its web, sent for identification, succeeded in reaching Brisbane, but in all probability it is one of the *Nephilas*. It would appear from Sir W. Macgregor's account that the web of this spider is not collected in the same manner as that described by Layard. Plate 1, fig. 2, reproduces a drawing of the implement, made from memory by Sir W. Macgregor, who describes it as consisting of a cleft reed or bamboo, on which "the animal or a number of them is tossed . . . until a double tissue of web about 3 or 4 inches broad and 4 to 6 feet long is





obtained." Unfortunately, the specimen intended for the British New Guinea collection has failed to reach its destination, but it is evident, from the material we have, that the web becomes densely felted together, and thus fitted for the purpose to which it is put. On examination, it is found that a lock of the felted web, about 120 mm. in length and 10 mm. in thickness, is taken, tied in the middle of its length to the end of the tail-line, its ends brought into contact, and, at some distance from their tips, joined together with twine; a part of the twine is enclosed as a core, round which the rest is wound to form a pendant, hanging either within or below the extremities of the web tassel [Plate 1, fig. a]. The tassel so carefully and uniformly made seems to be at once the bait to allure, and the snare to hold the prey of which the fisherman is in quest. The kite is raised just sufficiently to allow the tassel to reach the surface of the water, see Pl. II.; the fish, attracted by the glint of the web, fixes its teeth in the felt, from which it is unable to dislodge them, is played (as we may suppose) by means of the kite, and (as we hear) is finally lifted into the canoe in a small triangular landing-net, mounted on a forked stick. What kind of fish are the victims of this device, and what weight of fish can be secured without injury to gear apparently so fragile, we are not informed. This clever mode of fishing is also carried on from the shore.

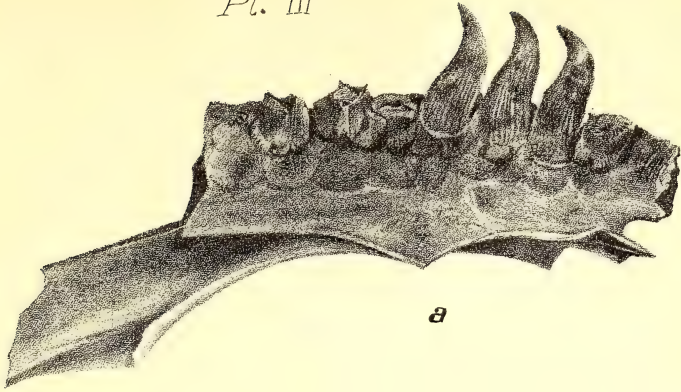
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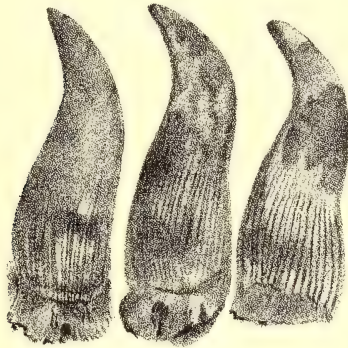
## A FURTHER TRACE OF AN EXTINCT LIZARD.

Of the formidable lizard to which on the evidence of a single fossil tooth the name *Varanus dirus* was assigned (Proceedings of the Royal Society of Queensland, Vol. 6, p. 98), no additional knowledge has been gathered from exploration until lately, owing to a long continued deprivation of the means of prosecuting field work of that or any other kind, which has been the lot of this Museum. In the early part of last year, however, it became possible to allow a collector, Mr. Broadbent, to make a brief excursion to his favourite fossil-hunting ground at Chinchilla, where, among the few objects of interest which time permitted him to exhume, he obtained the bone which is the subject of the present note. As will appear from the drawing on Plate III., it comprises almost the whole of a right maxillary, containing three entire teeth and the stumps of five others. In the conformation of the jaw and proportionate size of the teeth *V. dirus* appears to be more closely represented in life by the Papuan species, *P. salvadorii* than by any of the Australian monitors. The three teeth preserved are the third, fourth, and fifth; all the teeth, except, perhaps, the one foremost in the series, seem to have been equal in size, or nearly so, similar in shape, and set in close array with their bases in contact. In length and breadth this maxillary is about twice greater than that of an example of *V. salvadorii*, which measures, in the skeleton, 7 feet in length. With proportionate means of offence, a trunk equal in bulk to that of a crocodile, and the voracity of latter-day "gohanners," *V. dirus* would, to an unarmed man, be a formidable antagonist, and must have been, amongst others, an efficient agent in moderating the superabundant life of its times.

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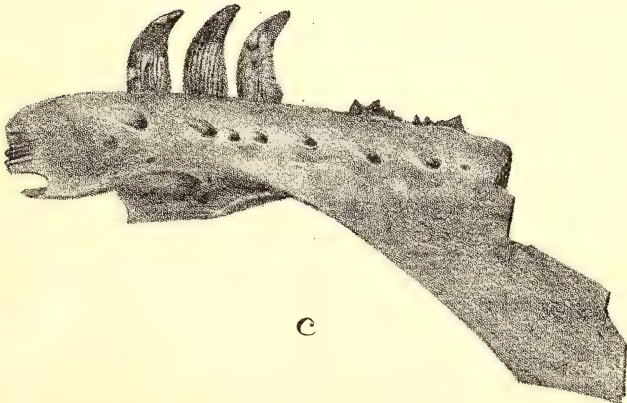


a



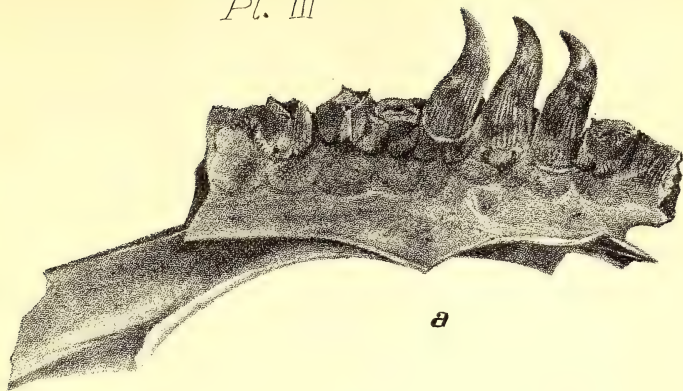
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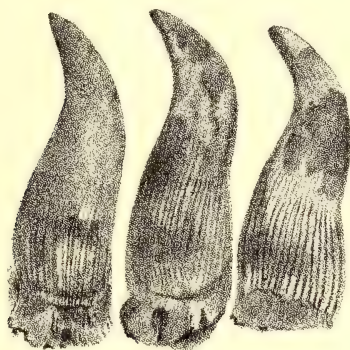


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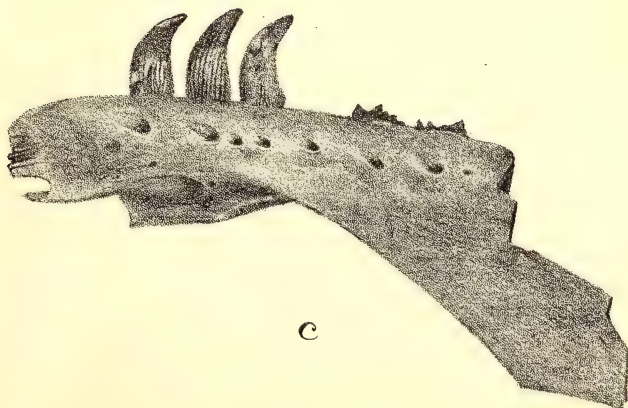


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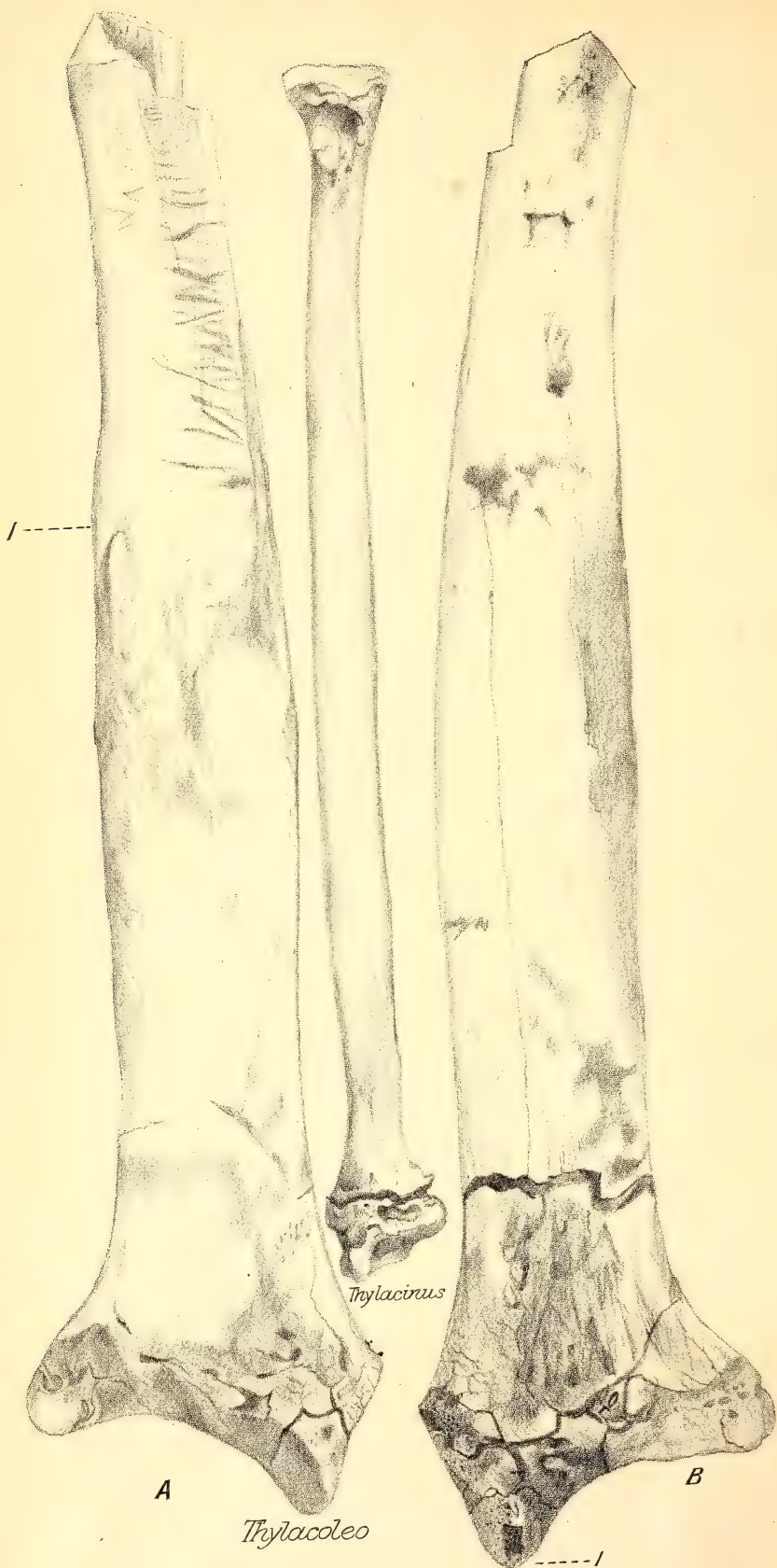


c









## BONES AND DIET OF THYLACOLEO.

In the year 1886 there was submitted to the judgment of osteologists (Pro. Roy. Soc. Queensland) a fossil femur bearing unmistakeable marks of derivation from some member, or close ally, of that strictly predaceous family of the *Marsupialia*, the *Dasyuridæ*. The affinity then recognised has not, apparently, been called in question. The animal, of which the bone is a relic, had at that time left to us no other known trace of its existence, unless, perchance, there might be attributed to it those jaws of formidable name, whose pretensions to represent marsupially the "king of beasts," have been, and still are, so briskly, and from one point of view not altogether unjustly, oppugned—the jaws of *Thylacoleo*. Pending, of course, the discovery of teeth, not thylacoleonine, possibly to be found in skeletal association with a like femur, or the rise of some other objection nearly as cogent, it was then proposed to see in a bone of that size, proportions, and form a part of the almost unknown skeleton of the beast, over which science has waxed warm, if not weary; and, since a phytophagous *Dasyure* is a thing hardly to be thought of, to disregard for the nonce the indications of a dental system, shown by experience capable of leading to contradictory conclusions, in favour of those given by a concomitant limb-bone, taken to be co-specific; with such teeth, and infer from it that *Thylacoleo* was no more a plant-eater than *Thylacinus*, to which, on the testimony of this femur, it was more nearly related than to any other *Dasyure*.

Since that time two things have happened: one is that other femoral fossils from the same, and other bones from the same or a very like source, have been brought to light; the other is that time has shown itself kindly disposed towards this line of argument, discrediting though it does the vegetarianism of the beast, in that it has not disclosed the teeth of any other marsupial in size compatible with this femur, and claiming affiliation with the *Dasyuridæ*. The second thigh-bone which has presented itself for study is, with the exception of the head, complete, and is in all respects, save in exact equality of size, identical with the one already described. Its entire length to the summit of its great trochanter is 12 mm. less, and it is proportionately narrower in the joints and slenderer in the shaft. A small reduction of size in all dimensions may be held to indicate sexual inferiority rather than distinction of species; consequently the bone hardly calls for either detailed description or portraiture here. Still less does the third example, the distal fourth of a specifically identical femur, which in its bad state of preservation serves only to support the others in showing that the rarity of their owners was not sufficiently great to explain that entire absence of their teeth, which must be confessed if these are not to be seen in the much debated ones of *Thylacoleo*. The other bones showing relations with *Thylacinus* in an equal degree, and in size proportionate to the femurs, are portions of a right and left radius, part of a tibia, and three calcanea.

**RADIUS.**—Plate IV., figs. A, B. The only mammalian limb-bone which has a sufficient general resemblance to this to be at all comparable with it is the radius of *Thylacinus* shown in the intermediate

figure, but the amount of difference in form between the two forbids the slightest suspicion that the fossil may have come from a *Thylacine*, even could we easily imagine one of that genus some ten or twelve times the bulk of the living species. The following are the most obvious points of divergence: The convex ridge which serves the purpose of the so-called "styloid process" of anthropotomy has in *Thylacinus* a very oblique direction across the long axis of the shaft, more oblique than one would gather from the drawing. In the fossil its direction is parallel to that axis. The distal articular surface is at its ulnar end bounded by a pronounced tuberosity directed downwards; this feature, absent in *Thylacinus*, seems to be peculiar to its extinct relative. The shaft is compressed fore and aft like that of the dog, much broader than it is thick (27 mm.  $\times$  17 mm.), and of nearly the same breadth for the lower two-thirds of the part preserved; proximad of this two-thirds it contracts rather suddenly. It is interesting to find on this bone muscular impressions that have much significance; the extent of the origins of the pronator teres and supinator longus is strongly defined by terminal ridglets, while the surface for the supinator brevis extends downwards as low as the uncontracted part of the shaft, where, as it passed over the edge, its surface of attachment was increased by a protuberance on the margin of the bone—Plate IV., fig. A, 1. These indications of muscular activity in pronation and supination are to say the least not inconsistent with the possession and use of the great talon-cores attributed to the animal by Owen, and rather numerous represented in our collections; they point to free play of muscular forelimbs in the prehension or retention of provender of whatever kind.

The second sample of this bone being merely a much weathered distal end yields no further information, and may be passed over.

TIBIA.—Plate V., fig. A.—The tibia, which, in the absence of any other claimant, may very reasonably, if not necessarily, be attributed to *Thylacoleo*, is exemplified by a proximal end with about 50 mm. of the shaft. The general form of its articular surface approaches decidedly to that of the tibia of *Thylacinus*, and, so doing, departs widely from the forms established in other Marsupials. Outside of the Marsupialia, the one of those which are available for comparison that comes nearest to it is the tibia of the Viverrine carnivores. Of the shaft, all that need be said is that the surface for the insertion of the ligamentum patellae is without any marked protuberance. The articular surface differs little in proportion but much in detail of form from that of *Thylacinus*. Its maximum and minimum diameters are 61 mm. and 50 mm.; those of *Thylacinus*, 38 mm. and 30 mm. Difference of general form results first from the greater proportionate length as well as breadth of the anterior tuberosity—Plate V., fig. A, 1—of which almost the whole anterior moiety was in the extinct animal occupied by the insertion of the patellar ligament. The great size of this tuberosity indicates, as in the kangaroos, uncommon power in the knee-joint, but that this power was not expended in saltatory swiftness is clear from the strong trend of the tuberosity outwards from the line of the thigh-bone (not

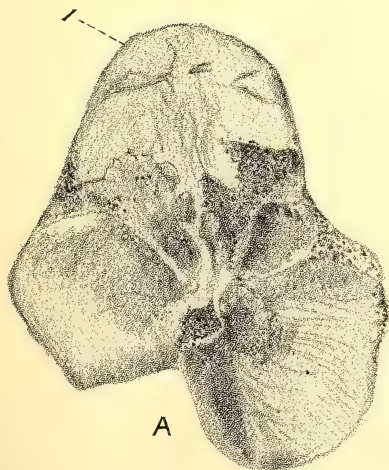




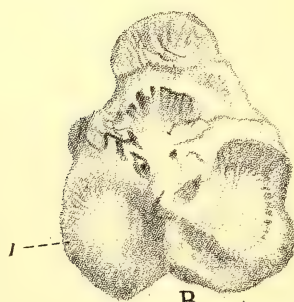
C  
*Thylacirus*



D  
*Thylacoleo*



A  
*Thylacoleo*



B  
*Thylacirus*





sufficiently marked in the figure). The resulting inability to project the two parts of the leg in quite the same plane, or at least the ability to project them in different planes, must have affected the habitual gait of the animal, and not improbably had relation to some peculiar function of the lower leg. Of the two condylar surfaces that of the inner side is in *Thylacinus*—Plate V., fig. B, 1, of nearly the same shape—namely, pointed ovate—as that of the outer side, and is not greatly the longer; in the fossil tibia the outer-surface is nearly circular, the inner oval and of so much greater longitude that its posterior margin extends backwards considerably beyond that of the outer. The extent of this surface is, of course, adapted to the unusual length of the inner condyle of the femur, and, it may be observed in passing, the mutual adaptation observable in this respect greatly strengthens the probability of the two bones being from animals of the same species.

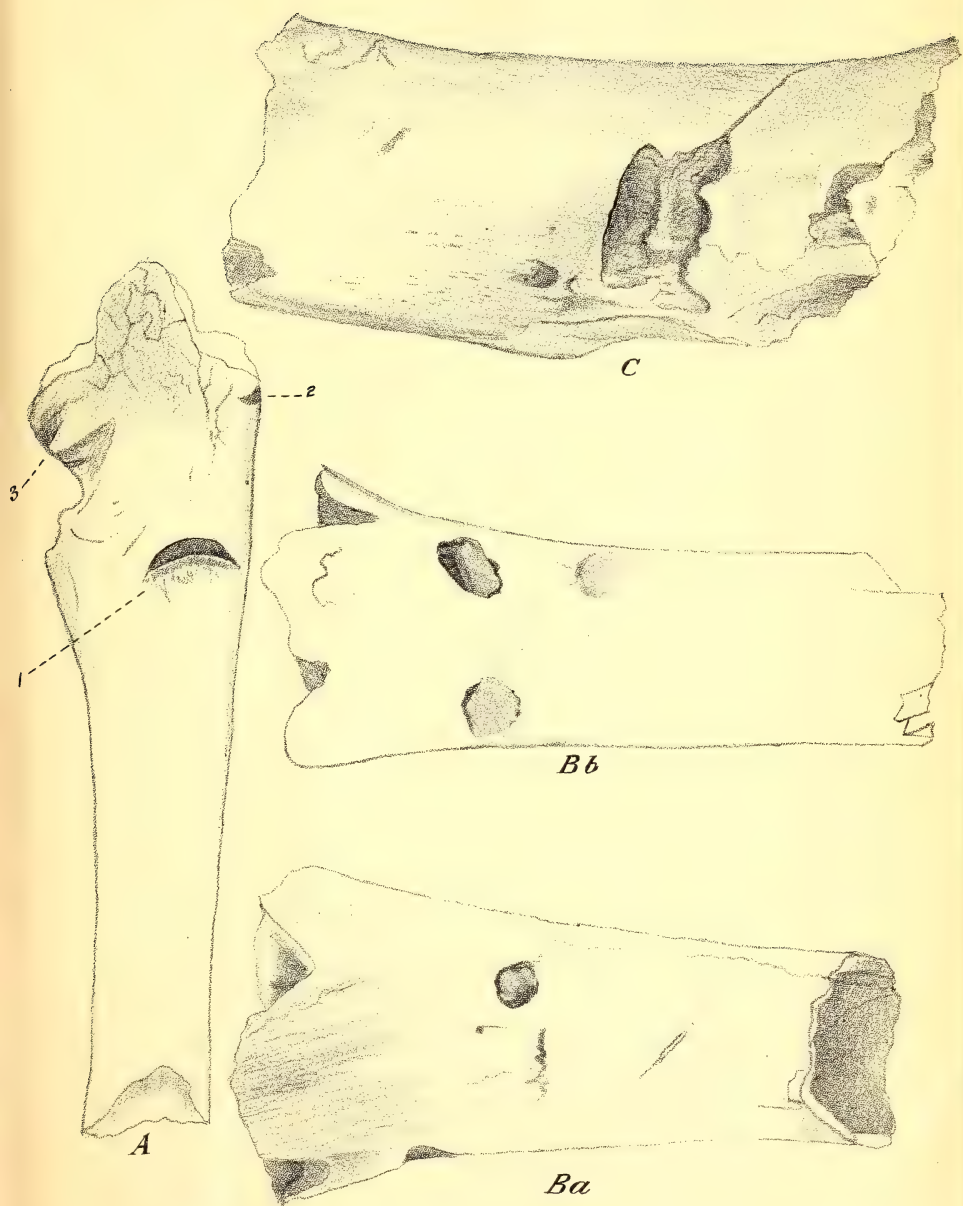
**CALCANEUM.**—Plate V., fig. D.—On comparing this bone with the heel-bones of the marsupials one by one no doubt remains, at least in the writer's mind, of its *Dasyuridine* affinities, while its tridimensional measurements—nearly twice those of the largest existing *Dasyure* (*Thylacinus*)—compel him to ascribe to it the same origin as the proportionately-sized radius, tibia and femurs already referred to *Thylacoleo*. Among differential characters—certainly of generic, probably of higher value—the most noticeable are these: A distinct incurvation of the shaft, the absence of the oval facette on the edge of the cuboid articular surface of *Thylacinus*—Plate V., fig. C, 1—corresponding to the similar facette on the astragalus, and its replacement by an extension of the rough lateral surface—Plate V., fig. D, 1—and a deeper and divided surface for the reception of the astragalus. It is evident from the curve of the bone that whereas the lower leg was directed outwards at the knee, the foot had the opposite direction, inwards, to a greater extent than in *Thylacinus*. Possibly these twists in the hind leg, slight though they might be, would be helpful to it if it habitually crouched over its food.

However this may be, one thing is clear—that these bones, the two femurs, the tibia, radius, three calcanea (and to these may be added the number of ungual phalanges known) all belonged to a large *Dasyuridine*, and, therefore, predaceous animal.

Those who on the evidence of teeth and cranium alone hesitate to see a beast of prey in *Thylacoleo* will find of course no conclusive argument adverse to their opinion in the question—to what animal then, other than *Thylacoleo*, are these bones to be attributed? With a certain degree of reason they may refer us to future discovery for the revelation of the real owner of them, even as they themselves, on the other hand, await the discovery of a skeleton of *Thylacoleo* showing kinship with a more or less frugivorous family. That these *Dasyuridine* bones are the first forthcoming may be due to a mere accident. But is it not within the pale of possibility that teeth and cranium may not in every case be the all sufficient criterion of affinity and habit? and what if it could be shown that the very teeth in question have probably done predaceous

work and recorded the fact on monuments left to us to decypher? On a former occasion those who are interested in the matter were asked (Pro. Lin. Soc., N.S.W., Vol. 8, p. 187) to accept a statement that tooth-marked bones are not unfrequently found interspersed among the fossils of the Darling Downs, and with it a suggestion that such bones bear evidence of maltreatment between the jaws of *Thylacoleo*, the cuts and bruises on their surfaces being fairly attributable to the action of the peculiar premolars of that animal. Up to that time no other teeth capable of producing the effects described were known, and the inference was a reasonable one, if only we could stand aside from the odontological dispute. No other such teeth have been subsequently discovered among some thousands collected in the interval, and the inference appears still more reasonable. But by way of presenting the facts in a clearer light by an appeal to the eye, some illustrations of the injuries to which the bones have been subjected are now offered.

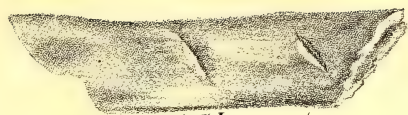
On Plate VI., fig. A, we have delineated a part of an ulna of a large kangaroo. On the convexity of its anterior surface is a lunulate incision (1), conformable in its downward curve to that convexity; the proximal edge of the incision shows a clean slanting cut through the dense outer table of the bone to the vertical depth of a millimetre; the other the rough splintered surface from which the bone tissue was broken off by the stroke. This cut into the substance of the bone is clearly due to a vigorous use of some broad incisive instrument. Near the surface of fracture appears a smaller nick of the like nature (2), and nearly in opposition to it several scorings (3), evidently the marks of gnawing teeth, show where the division of the bone was ultimately effected. By what means was the cut (1) so cleanly made? The only two capable instruments known to me are the tomahawk and the tooth of *Thylacoleo*. The tooth of the dog was an incapable one, even were that animal on the spot at the time, which, as far as we know, it was not. The use of the human implement, were man also in existence then in Queensland, is positively denied, while that of the tooth of *Thylacoleo* is as positively affirmed by the second example. This (Plate VII., figs. Ca. and Cb.) is a rib of a kangaroo exhibiting on one side two adjacent cuts each similar to the one before mentioned, and exactly opposite to them on the other side two corresponding cuts. These latter prove incontestably that they and their opposites were made simultaneously by two chisel-edged shearing blades brought together with sudden force; for their sloping sides are inclined in opposite directions. Of precisely similar character are the cuts shown on opposite sides of a third fossil (Plate VII., figs. Aa. and Ab.)—and if it were necessary or even possible, there might be figured quite a number of bones telling the same tale in like manner though with varying emphasis. From the surface of the bone figured on Plate VI., fig. C, two contiguous portions of the substance of the bone have been chopped out bodily. Plate VII., Figs. Ba. and Bb., represents the most striking proof, however, that the interpretation of these palaeoglyphs is well founded. It is a mandible of a young kangaroo; on its outer side (Ba.) close to the root of the ascending limb the alveolar margin of the bone has



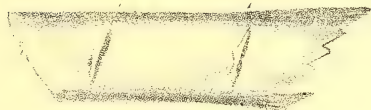
*Tooth-marked Bones N°1*







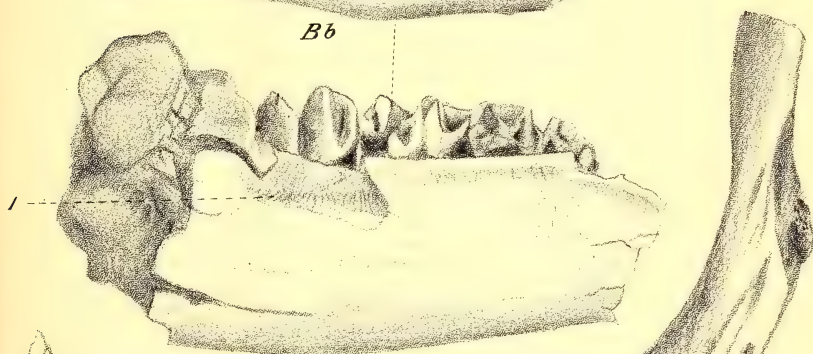
*Cb*



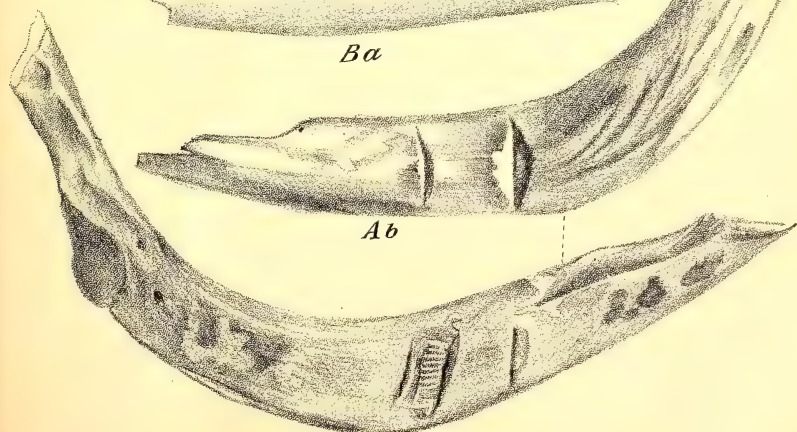
*Ca*



*Bb*



*Ba*



*Ab*

*Aa*

*Toothmarked Bones 2.*



been crushed inwards and downwards so that a deep and well-defined area of impression has been left, Ba., and that impression is a mould in the soft bone of the surface of the tooth of a young *Thylacoleo*. On the inner side, opposite to this is another impression, Bb. 1, but shallower and with irregular vertical ridges and groovings just as clearly produced by the opposite tooth of the same jaw. The kangaroo mandible has unquestionably been grasped transversely by *Thylacoleo* jaws, which have vainly attempted to crush it between them. In addition to these signs of the work done by the premolars, the caniniform incisors of *Thylacoleo* have also left sufficient evidence of their destructive function. The subject of Plate VI., figs. B., a and b, is the distal end of a tibia. On one side of it is a deep circular pit, Ba, sunk through the substance of the bone by a conical body, which, in its passage, has thrust inwards the surface of the bone; opposite to this, on the other side, B b, are two similar pits. Pits like these are by no means infrequent, and can hardly be ascribed to any other agent than *Thylacoleo*. The ascription is, of course, open to the objection that they might have been caused by conical teeth other than those of *Thylacoleo*, crocodilian for example; but as on some bones they are found accompanying the transverse cuts—for example, on Plate VI., Fig. Ba—it is difficult to suppose that the two kinds of toothmarks had different origins.

Whoever is inclined to think that the conclusions drawn from the two classes of data adduced in the preceding notes are as veritable as the facts on which they are founded are verifiable will have no difficulty in summarising the results as follows:—That in the old fauna there was a Dasyuridine animal of bulk commensurate with that of the skull called *Thylacoleo*; that this beast, though probably carnivorous, was also habitually ossivorous—in fact, a marsupial hyæna; that the marks of its teeth upon bones are such as could be made by the teeth of *Thylacoleo*; that in the absence of positive proof, or indeed any evidence to the contrary, we cannot reasonably refuse to accept that kind of evidence in this case, which in so many analogous cases we allow to direct our judgment, circumstantial and inferential, and decide that *Thylacoleo* was a beast of prey belonging to or nearly akin to, the Dasyuridæ.

In brief, one might suggest that, systematically, *Thylacoleo* should be placed under Dasyuridæ as a sub-family Thylacoleonina.

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## DESCRIPTION OF A CHARMOSINOPSIS.

A small gathering of Psittacine birds, the last collection brought from British New Guinea by the late Lieutenant-Governor, Sir W. Macgregor, has indeed served to increase the number of examples of certain species of the birds of that kind and place in cabinet, but, unfortunately, has its value diminished by infrequency of information about the specimens; even the habitat being in the majority of cases unrecorded. Its contents are as follows:—*Microglossus aterrimus*, one example, without label; *Aprosmictus chloropterus*, male and female, no label; *Psittacella picta*, "Wharton Range, at 11,100 feet, male, July, 1897, iris—lemon-yellow, beak—yellow, feet—dark grey, food—fruits"; *Coriphilus placens*, four males and two females, no label; *Cyclopsittacus suavissimus*, "Mambare River, male, July, 1897, iris—yellow, beak—dark grey, feet—dull green, food—fruits"; *Geofroyus aruensis*, male and female, no label; *Charmosina stella*, three examples, no label. In addition to these there is a *Charmosinopsis*, which, if previously collected, does not seem, as far as I can ascertain, to have been distinguished from *C. pulchella*, of the Astrolabe Mountains, with which, however, it can hardly be considered identical.

## DIAGNOSIS.

*Charmosinopsis* sp., male, with the thighs purplish-black and the yellow shaft-streaks confined to the pectoral region. Female, with yellow shaft streaks on most of the purplish-black feathers of the thigh. Young, with the nape and thighs green, and with a yellow band across the under surface of the wing.

Probably the bird was met with on the Wharton Range, but no definite information to that effect accompanies the six examples collected—viz., two males, three females, and one of doubtful sex in immature plumage.

## DESCRIPTION.

## ADULT MALE, Plate VIII.

Most of the head above and all of it below, nape, sides of rump and whole under surface (including the lower flanks) red; occiput dull purplish black; rump slate-green; rest of upper surface and upper tail-coverts and outer edges of all the primaries, except the first, bright grass green; central tail feathers dull green on proximal half of upper surface, on distal half red passing into yellow at the tip; proximal half of laterals red, broadly edged with green; distal half yellow; the red base and green edges diminishing successively towards the outermost; feathers of upper breast with yellow shaft-streaks; wings black above, slate-black below; under wing-coverts and edge of wing red, more or less tipped with green; beak yellow, tips of both mandibles blackish. Length 180 mm., wing 90 mm., tail 105 mm., culmen 12.5 mm., tarsus 7 mm.





*Charmosynopsis bella*

↓





## FEMALE.

Similar to the male, but with the sides of the rump and the lower flanks yellow, and with yellow shaft-streaks on several of the tarsal feathers ; rump more or less distinctly barred with green tips.

## IMMATURE, — SEX ?

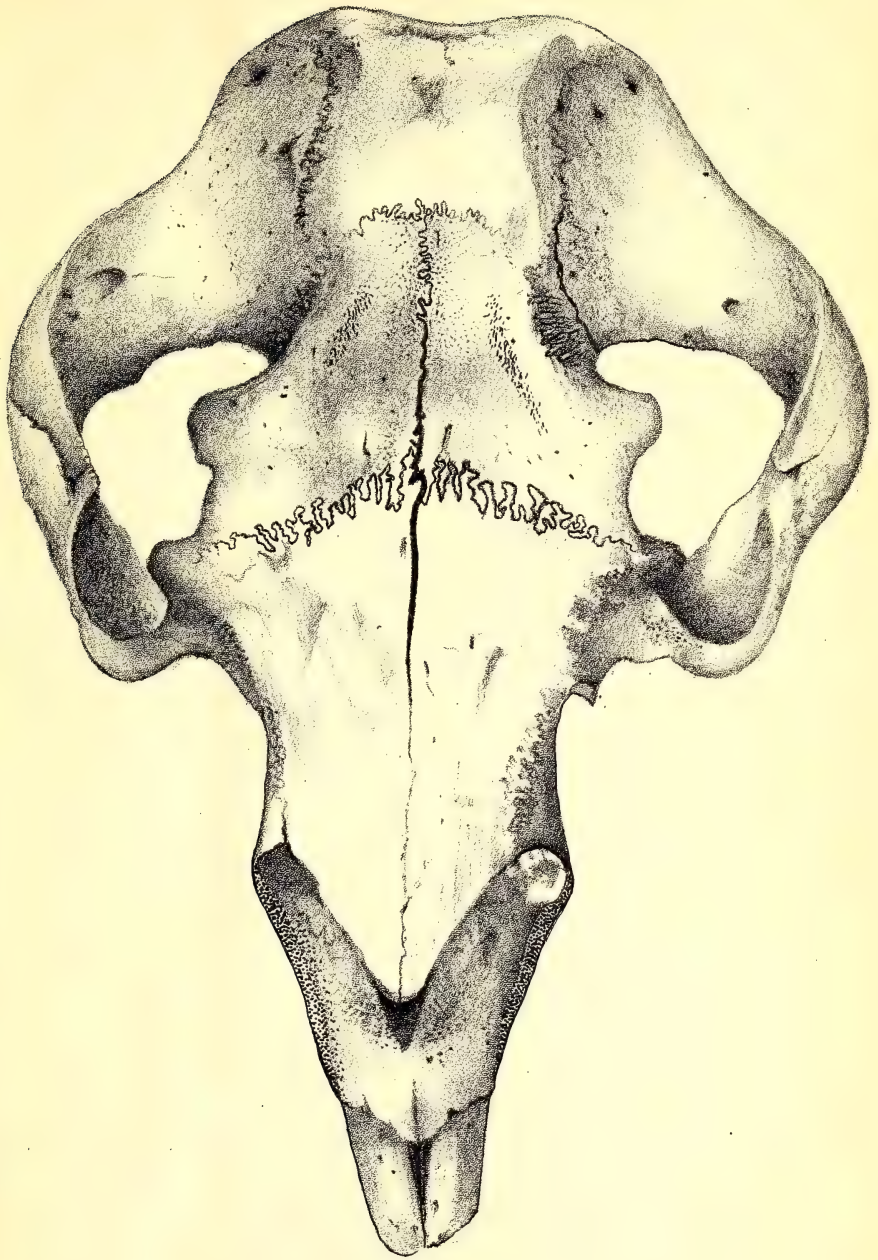
Occiput anteriorly purplish-black, some of its feathers tipped with green ; nape and shoulders red, barred with green tips ; rest of upper surface green ; sides of rump yellow ; head to occiput and under surface red ; most of the feathers of the upper breast and some on the abdomen tipped with green, the former with premonitions of yellow shaft-streaks ; lower flanks yellowish green ; thighs greenish-black ; on the under surface of the wing a yellow band formed by the basal moiety of all but the four outermost primaries being of that colour.

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## A NEW SPECIES OF HAIRY-NOSED WOMBAT.

The existence of a wombat in this country is said to have been long known to bushmen living at certain points adjacent to the border of New South Wales. Occasional rumours of it have, indeed, during many years, reached Brisbane, but either they have died away—"a voice and nothing more"—or proved, as usual, mere bruit of error, causing too often a wild-goose chase. A Queensland wombat was, therefore, to my mind, fast becoming a myth, when a letter from Mr. Gillespie, of Bullamon Station, on the Moonie River, told me that the skin of an animal, which he judged to be a wombat, had been brought to him by a dingo-shooter in his employ. In the absence of any suspicion that wombats on this side of the border would be anything other than pioneers of the New South Wales species spreading northward, Mr. Gillespie's information only excited the hope that this species might be claimed as a constituent of the Queensland fauna. Greatly to my surprise I found, on receiving the skin, that it was from a quite different animal; in short, that if there were a known species to which it could be referred, it would be the *P. latifrons* of South Australia. The furry nose and silky fur of *P. latifrons* were clearly in evidence, yet, as the characteristic colour-marks given in published descriptions appeared to be wanting, the identification was incomplete. But, as the apparent absence of these might possibly be due to the confusion of colours occasioned not unfrequently by the wrinkling of roughly dried skins, or, considering the geographical remoteness of St. George from the habitat of the southern species,\* merely the result of local conditions, it could not, on the other hand, be said to be distinct. While in this doubt I had the satisfaction of receiving from Mr. Gillespie, not only the bones appertaining to the skin, but the green pelt and carcass of a second example, and subsequently a third skull, the only part of the skeleton which he had been able to recover from an animal which had been drowned in a flood in the year 1891, some miles to the north of St. George. From these skins and skeletons there is no difficulty in determining that the wombat represented by them is distinct from all the three known species. Its rhinarium is hairy, its fur silky, and its ears elongate; leading features in which is in strict accord with the southern species. The inner surface of its ears, indeed, is hairy, whereas that part in *P. latifrons* is said to be naked, yet this in fact is only a partial difference, for in an example of *P. latifrons* serving for the present comparison, the ear within is clothed in part with hair, similar to that forming an entire, though scanty covering of the skin in Mr. Gillespie's animals. This same example of *P. latifrons*, a female, shows that two other features entering into the published descriptions of it, a white rhinarium and a black chin, are not really so, since they are both inconstant; only the middle of its chin is dark, and no part of its nose is white; variations in colour in virtue of which it is in further agreement with its northern relative. In general

\* Professor Stirling, in answer to an enquiry, is good enough to say: "Referring to the distribution northward of the wombat, the furthest north I can hear of it is the Gawler Range, which lies north-west of Port Augusta, at the head of Spencer's Gulf. This is probably *P. latifrons* as we have only received *P. Michelli* from the south-east.



*Phascolomys gillespiei.*











*Phascolomys gillespiei*





colouring, however, the new wombat seems to differ rather considerably from its ally, but until we are better acquainted with the limits of variability in this respect imposed on each, divergencies of the kind have not much defining value. In the proportions of the head the two wombats differ distinctly, the Queensland animal having this considerably longer, and between the eyes broader, though between the ears no broader; it is also longer in the body and shorter in the leg, but on such differences, also, it is not altogether safe to rely until they are known to be beyond the extreme limits of specific variability.

From external characters, which, as far as we know, do not quite enable us to determine the question at issue, appeal lies naturally to the skull (Plate IX.). This leaves no room for doubt. Its characters in three examples of different ages and both sexes are as constant as those of any of the known species, and its differential features are scarcely less pronounced. They are as follows:—Skull broader in proportion to its length than in the other species, frontal absolutely shorter, and nasals at the nasal orifice much broader; nasals extending backward [between the frontals, lachrymal protuberance well developed; nasal spine of the intermaxillary high and projecting; all the nasal sutures, especially the naso-frontal, intricately interlocking.

It will be observed that in the proportions of the skull, the shortness of the frontals, anterior breadth of the nasals, the projecting nasal spine, and in the pronounced ramification of the naso-frontal suture,\* the skull stands aloof from those of the other wombats; in the cuneiform extension of the nasals between the frontals, and the greater prominence of the lachrymal tuberosity it agrees with the skulls of *PP. platyrhinus* and *ursinus*. Yet these signs of affinity with the naked-nosed wombats and these peculiarities of its own notwithstanding, its facies is that of *P. latifrons*.

#### EXTERNAL CHARACTERS, Plate X.

In the flat and wrinkled skin of an immature male with the fur close and comparatively long (25 mm.), the colour is a tortoise-shell-like mixture of deep fawn, black, and grey, the first predominating on the head and flanks, the black (caused by an excess of hairs largely tipped with black) on the back, and the grey on the abdomen and inner surface of the limbs; preocular region, middle of chin and perineal hair as in the female; inner surface of ears fawn; scrotal region white.

In a stuffed female of adult age with shorter and scantier fur, the general colour is grey, mottled with black where the black bases of the hairs show through, and washed with fawn, especially on the rump and back; rhinarium brown, passing into the colour of the upper surface; a broad curved blotch before and a spot behind the eye black; no white marks on the head; inner surface of ears, throat, chest, and mammary glands white; middle of chin, outer surface of

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\* A minute corrugation of the edges of these ramification has been omitted in the figure.



ears, forearm, feet, and perineum dark brown. Total length 1,020 mm., ear 85 mm., head to fore edge of ears 200 mm., between the eyes 113 mm.

In both sexes a sacral crest reaches the tail, and the perineal hair is bristly.

The four living species of *Phascolomys* now known seem to arrange themselves into two groups, distinguished as of old externally by harsh or silky fur, naked or hairy nose; internally by cranial dissimilarities and by a normal or abnormal number of ribs; but through the intervention of the new species more closely interrelated than we had previously any reason to suspect. As the features common to the two northern species point backward to a common ancestry, so do they point forwards to the two southern forms as their more or less modified descendants.

A case of two related species displaying in widely-separated localities racial differences in the skull, while agreeing in those external characters which distinguish them from the rest of the genus, is not without interest.

A craniologist comparing the skulls would hardly suppose that they came from animals so much resembling each other externally. Moreover, a lasiorhine wombat, with cranial features shared by the gymnorhine members of the genus, would appear to stand somewhere near the point of divergence, in a line of ancestry common to the naked and hairy-nosed species, and does not lose interest on that account.

Mr. Gillespie has so fully identified himself with the discovery of this wombat, that it is but a measure of justice to him to endeavour to perpetuate the memory of his good offices by proposing for it the name *Phascolomys gillespiei*.

#### MEASUREMENTS OF SKULLS.

|   | Old male. |     |     | Young male. |     |     | Female. |
|---|-----------|-----|-----|-------------|-----|-----|---------|
| Entire length ... ..                              | 185       | mm. | ... | 182         | mm. | ... | 179 mm. |
| Entire breadth ... ..                             | 142       | "   | ... | 132         | "   | ... | 133 "   |
| Length of nasals ... ..                           | 78        | "   | ... | 83          | "   | ... | 80 "    |
| Greatest breadth of nasals ..                     | 65        | "   | ... | 63          | "   | ... | 64 "    |
| Least breadth of nasals ...                       | 35        | "   | ... | 32          | "   | ... | 34 "    |
| Breadth between temporals ...                     | 45        | "   | ... | 42          | "   | ... | 40 "    |
| Breadth between postorbital processes ... ..      | 76        | "   | ... | 68          | "   | ... | 70 "    |
| Breadth between orbits ...                        | 67        | "   | ... | 60          | "   | ... | 62 "    |
| Palate ... ..                                     | 105       | "   | ... | 102         | "   | ... | 100 "   |
| Diastoma ... ..                                   | 47        | "   | ... | 46          | "   | ... | 42 "    |
| Expansion of nasal process of premaxillary ... .. | 45        | "   | ... | 42          | "   | ... | 45 "    |

Mr. Gillespie is good enough to inform us that his wombat affects level country covered with red soil in which it forms its burrows; that it is only procurable shortly before the dawn of day; and that it is known to the dark native of the district by the name of "Yaminon."

ANNALS  
OF THE  
QUEENSLAND  
MUSEUM.

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No. 6.

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By C. W. DE VIS, M.A.

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## A CONTRIBUTION TO THE KNOWLEDGE OF THE EXTINCT AVIFAUNA OF AUSTRALIA.

IN April, 1902, about two hundred small bones, few of them perfect, were received for identification by the writer from Professor Gregory. They had been collected at several stations during the Professor's geological examination of deposits around Lake Eyre, and by him were determined to be of Pliocene or Early Pleistocene age. It is of no little interest to learn that they were associated with the dingo, but not with man. Their general aspect and state of mineralisation are extremely like those of bones of birds from the Darling Downs. That they are of the same age as the latter is certified by the occurrence among them of species found in the Queensland locality, where neither dog nor man has yet been found.

The attempt to draw attention to them now made has been delayed partly by an inspired hope that additional material would be forthcoming, and that some of the conclusions now resting upon meagre evidence would be thereby modified. In the absence of this means of correction, the writer submits the best account of the relics which he is able to render.

Naturally, it will be to many a source of dissatisfaction that they can gain from such descriptions of bones little definite information beyond the fact that there once existed such and such hawks, ducks, pigeons, etc., all different from the species now living. Apart from the general resemblance in form, plumage, colours, habits, etc., to living birds of the same families or genera which the extinct ones, no doubt, possessed, we are altogether unable to learn or conceive anything respecting them. We should be very glad to know how the colours, black and white, were disposed on the old time Wonga Wonga and whether its flesh were as dainty as that of its descendant. We should also like to portray the noble Swan that once breasted the waters of Lake Eyre, but these and such like gratifications are among those that in the nature of things can never be ours. We must be content to simply specify the birds we meet, hoping that we may thus help future inquirers, furnished with increased knowledge, to trace out the relations of the avifauna with its predecessor and with the present one.

The number of bird bones in the present collection retaining characters which enable one to identify them is one hundred and eight. There are, besides, ninety undeterminable fragments derived from birds, marsupials, and reptiles (*Chelonians*).

## SUB-CLASS, CARINATÆ.

## FAMILY, FALCONIDÆ.

TAPHAETUS de Vis.

T. lacertosus n.s.

HUMERUS.—The distal end of a right humerus Pl. I., fig. 1. Though the size of a bird bone is not in itself any indication of its affinities, there are limits within which it is a useful guide to them. In the present instance we may give it due consideration. There are but few carinate birds in Australia which have a humerus over 25 mm. in breadth at the distal end. All told they are the pelican, swan, crane, jabiru, bustard, eagle (wedge-tailed), and sea eagles. To one or other of the families represented by these birds a fossil humerus 31 mm. in breadth may be safely referred, until it can be shown to belong to a bird now foreign to Australia. For the purpose of ascertaining to which of the families the fossil belonged, it is only necessary to glance at its leading features. Its proportions alone are nearly able to decide the question, the length of the joint measured from the level of the ectepicondylar process (*a*) is much less than its breadth across the condyles; the probrachial or brachialis inferior area (*b*) is a cavity deeply sunken between the edges of the shaft; the popliteal fossa (*c*) is also, but less deeply, excavated; the ectepicondyle is tumid laterally, its process short but acute; the entepicondyle (*d*) is only so far oblique as to be directly continuous with the edge of the shaft; the ulnar condyle (*e*) bears across it, well but not sharply defined, the oblique ridge (*f*), so frequent in birds, and, in this instance, forming with the oblique edge of the non-articular part of the condyle a V shaped ridge; the condyles are narrow; the radial extends proximad only to three-fifths of the length of the joint; on the postaxial side of the bone the extensor sulci (*g*) are remarkably broad and deep; the olecranal fossa (*h*) is deep and well defined.

With this bone the humerus in *Pelecanus* is irreconcilable, on account of the exceptional fore-and-aft thickness of the entepicondyle in the latter, the comparative shallowness and indefiniteness of its olecranal fossa, and the great length of its condyles, of which the radial extends proximad nearly to the level of the place of the ectepicondylar process were that developed. The part of the humerus in the Swan corresponding to the fossil differs from it in its small probrachial area, its shallow popliteal fossa, and the extension of its relatively large radial condyle beyond the end of the epicondyle, which again is devoid of a process. No sign of relationship with the fossil is yielded by the Australian bustard, which has, moreover, the radial condyle large and reaching nearly to the level of the epicondylar end, the olecranal fossa small, and

the probrachial area superficial and partially ribbed. Nearly on the same grounds, with the addition of an ectepicondyle without a process, the bones in the Crane and in the Jabiru are incomparable with the fossil. In birds of the remaining family, the *Falconidæ*, the bone has so much in common with the fossil humerus that no doubt as to the affinity of the latter can exist. Compared with *Haliaetus leucocephalus*, it agrees in the relative shortness of its joint, proportions of its condyles, depth of its olecranal fossa, and development of its epicondylar process. But its differences from *Haliaetus* are strikingly great; from *Uroaetus* still greater. These have the probrachial area superficial, the popliteal fossa shallow, the extensor sulci faint. Everything in the structure of the fossil conspires with the boldness of its sculpture to lead to the conclusion that it was part of an eagle not much larger than *H. leucogaster*, but of enormously greater power of flight, and when one recalls that the sea eagle can as it flies gorge on a full-grown black duck, the weight of the prey which this extinct eagle could devour on the wing may be imagined. Locality, Kalamurina.

QUADRATE.—Plate I., fig. 2.—Except for the loss of the orbital process (*a*), this is an entire and well-preserved bone from the right side. The presence of a deep circular pit (*b*) in the fore end of the base of the bone, for the reception of the quadratojugal, taken in conjunction with a large pneumatic foramen (*c*) on its posterior side below its distal articulating surface for the squamosal, and the breaking up of the posterior part of its mandibular articulating surface into two distinct facets, determines its relationship to the eagles. *H. leucogaster* has the quadratojugal pit and the foramen, and its ventral surface does not, as in many birds, afford to the mandible a continuous surface of articulation. Since, in this eagle, the length of the bone measured from the outer end of its squamosal articulation (*d*), to the point of junction with the pterygoid (*e*) is 20 mm., and in the fossil 22 mm., the latter represents a bird about as much larger than *H. leucogaster*, as the humerus gave us reason to expect. There does not, indeed, seem to be any reason why the fossil should not be attributed to *Taphaetus*, provisionally at least; and if this be admitted, the quadrate, one of the most characteristic of bones, amply affirms the justness of proposing for it generic distinction from other Australian birds of prey. Its squamosal surface, apart from minor points of difference, is on the whole similar to that of *H. leucogaster*. The foramen (*c*) distad of this is not, as in *Haliaetus*, divided by a deep septum, but is one large opening nearly one-third of the length of the bone, the quadratojugal pit is very wide and deep, more than 3.5 mm. in diameter, the mandibular surface is divided by a broad and deep sulcus (*f*) into anterior and posterior regions, the anterior bearing on its lower face a quadrangular facet (*g*), which extends to the quadratojugal pit; the posterior is sub-



divided into three facets, two diversely declining from each corner—namely, a larger one on the outer side (*i*), and a smaller one facing inwards on the inner side of the end for the pterygoid (*k*), and a smaller one (*l*), posterior to the others; the middle of the outer ventral edge of the bone (*m*), which, in *Haliaetus*, is expanded in order to increase the articulating surface, performs the same service in the fossil, but is very much thicker and more protuberant. The owner of this quadrate was as strong in the beak as on the wing. Locality, Kalamurina.

In the proceedings of the Linnæan Society of New South Wales, Vol. 6, at p. 123, is a note proposing that the Eagle described in the Proceedings of the Royal Society of Queensland, Vol. 6, p. 161, under the name *Uroaetus brachialis* should be removed to a new genus, *Taphaetus*, on the ground that an aquiline femur figured and described in the note, and assumed to be conspecific with the humerus, *U. brachialis*, could not belong to the living genus, *Uroaetus*. This proposal is largely based on the improbability of two large eagles co-existing in the same fauna and locality. Now that we have proof that two birds of the kind were contemporary, it seems advisable to restore *brachialis* to *Uroaetus*, the genus to which its humerus allies it. In placing the humerus and quadrate now described in the same genus as the femur of the note, the writer is led by a desire to avoid multiplication of names on insufficient grounds. The femur is  $7\frac{1}{2}$  mm. shorter than that of a female of *Uroaetus audax*, but this measurement is estimated after a conjectural restoration of the condylar region, and may be somewhat defective. The humerus, on the other hand, is decidedly larger than that of *Uroaetus audax*. We must therefore either propose a new genus for the latter fossil, or regard *Taphaetus* as a rather short-legged eagle, a course which for the present seems preferable.

#### ASTURÆTUS n.g.

##### ASTURÆTUS furcillatus n.s.

TIBIOTARSUS.—Plate I., fig. 3.—A right *tibiotarsus*, wanting the cnemial crest, but otherwise well-preserved. A cnemial crest produced but slightly, if at all, proximad of the articular surface of the head, a fibula anchylosed to the shaft at its distal end as well as to the peroneal ridge, and a broad low distal joint with low ridged malleoli, of which the inner on the post axial side inclines ventrad at a much more acute angle than the outer.—these features combined afford good guidance to the tibia of the Australian *Falconidæ*, exclusive of *Pandion*. But to discriminate between the tibias of the genera wherein the bones are nearly the same in size and proportions—namely, *Haliastur*, *Astur* and *Lophoictinea*—is no easy matter, for these are all very much alike. Happily, it is not necessary to attempt to do so now, since the tibia of the extinct falconine bird named in the title is sufficiently distinguished from all of them by characters of its own, observable on its almost

perfectly preserved distal end. Immediately proximad of the outer malleolus, the edge of the shaft is dilated, and is slightly curved forward, with the result that a distinct, though shallow, groove (*a*) is formed between it and the bridge for the extensor tendon; the opposite edge of the bone is somewhat dilated in the recent genera, but in the fossil to a greater extent, and a deep groove (*b*) is formed between it and the foot of the extensor bridge. This edge is continuous with the sharp ridge-like edge of the shaft which descends from the inner anterior crest (*c*), the inner limit, I presume, of the flexor perforans muscle. The most peculiar feature of this tibia is the structure of the extensor bridge. This is Y shaped, the fork of the Y arching widely over the inlet orifice, and its stem separating two outlets (*d* and *e*), one at the proximal end of each malleolus. It would seem from this that the extensor tendon divided beneath the osseous loop, a circumstance I have not before met with. Whether this is an abnormality in the species or a constant character in the genus, time alone will show. As to the relations of the bird we might, judging by its proportions, affiliate it to *Astur*. It has exactly the same thickness of shaft as in *A. novæhollandiæ*, but it is 5 mm. longer. But in structure it approaches more nearly to *Nisaetus*, which has a similarly wide and deep extensor sulcus, a dilatation of the shaft near the inner malleolus, and a flexor perforans ridge on that edge of the bone. The hawk seems therefore to stand somewhere between the Goshawk and the Little Eagle. Locality, Lower Cooper. Loc. 5.

*Baza gracilis* n.s.

HUMERUS.—Plate I., fig. 4.—A very imperfect humerus from the left wing, consisting chiefly of the shaft, with remains of the condyles at the distal end. I am led to attribute this bone to a member of the *Falconidæ*, mainly by the position and extent of the pectoralis scar (*a*), and of so much of the anterior crest as still surmounts it, by the curvatures of the shaft, the status of the epicondylar tuberosities, and by the relative size of the radial condyle as is indicated by its remains. Among the hawks, with a humerus of corresponding size—that is, of the smaller kinds—*Baza subcristata* seems on the whole to have the greatest likeness to the fossil, and to have an uncommon feature, which it might well have received from the extinct bird. Pending correction by future discovery, the two may fairly be considered to be congeneric. The head of the fossil is broken off at the proximal end of the pectoral scar, which has much the same form and extent as in *B. subcristata*, but is more on the dorsal edge of the bone, and is separated by a well-marked sulcus from the base of the anterior crest. At the distal end, the ulnar condyle is, with the part adjacent, almost entirely destroyed; the radial condyle, fortunately in great part preserved, does not nearly extend to the level of the ectepicondylar tuberosity (*c*), from which, as in *Baza*, a transverse ridge



is carried to the edge of the probrachialis area. This, in the fossil, is more pronounced, and on reaching the area curves suddenly proximad and vanishes. It is the feature to which reference has been made. The popliteal fossa is shallow, but the probrachialis area is deeper and more clearly defined than in the recent species; its surface is rough, but not longitudinally striated. On the postaxial surface the sulci for the extensor tendons are also deeper and better defined. The length of the fossil is 61.5 mm., the breadth of the shaft is 5.5 mm. at the narrowest, of the distal end, 14.5 mm. Locality, Lower Cooper. Loc. 6.

### FAMILY COLUMBIDÆ.

#### LEUCOSARCIA prævisa n.s.

HUMERUS.—Proximal half of a bone of the right side minus a part of the internal and of the external tuberosities (Plate I., fig. 5a). This portion of the pigeon wing is recognised at once by the shallowness of the subtrochanteric fossa (*b*), and by the short, blunt, and triangular external tuberosity (*a*). The fossil is in generic agreement with *Leucosarcia*, but represents a more delicately formed species. Its capitulum is proportionately smaller, and its shaft comparatively much attenuated, but its sulcus transversus (*d*) is considerably deeper, its incisura capitis (*e*) wider, and the cribriform plate of its subtrochanteric fossa is pierced by more numerous and larger foramina. These seem to be sufficient differences to warrant specific distinction. Locality, Wurdulumankula.

### ORDER LIMICOLÆ.

#### OCYPLANUS n.g.

##### *O. præses* n.s.

TARSOMETATARSUS.—Plate I., fig. 5b., represents the distal end with a part of the shaft of a right tarsometatarsus. The leading discriminative characters of this bone are, first, the absence of any trace upon the shaft of a first metatarsus; second, a great inequality in the prolongation of the free ends of the metatarsals. From this combination of features it results that the great majority of the families of Australian birds are withdrawn from consideration. In brief, we are reduced by it to compare with the fossil the following only—the ducks, grebes, and certain of the *Limicolæ*. The ducks are in general agreement, but have the metatarsus commonly short and strong; in no case are its proportions like those of the fossil; it is impossible to obtain the metatarsal index of the latter, but it is evident from the fragment of it preserved that the length and slenderness of the entire bone would deny its derivation from a duck.

Moreover, the vascular perforation near the end of the bone is, in the ducks, situated between the bases of the pedicels of the second and third trochleas, the bridge between the pedicels being very short, whereas the perforation is, in the fossil, at a great distance from the free ends. The same two objections apply to the grebes, but the latter of them with less force, since the perforation is in them not so far distad as in the ducks. We first meet in the *Limicolæ* with bones similarly conditioned to the fossil as to structure and proportions, but not as to size. The breadth of the fossil across the trochleas is 12.5 mm., of the shaft, 5 mm.; in the Stone Plover the former is 11.5 mm., of the shaft at the same point, 4. *Burhinus* approaches it then most nearly in size, but in form is quite different. The shaft of the fossil expands gradually to its greatest trochlear width; in *Burhinus* the trochlear expansion is sudden. There is, in fact, no genus of the *Limicolæ* known to the writer into which this metatarsus can be admitted. It therefore becomes a question whether to designate it *Gen. et sp. ind.*, or to give it a name. Yielding to the persuasion that the latter course will be more convenient to students of the subject, the writer proposes for the bird the names given above.

## FAMILY CICONIIDÆ.

### *XENORHYNCHUS nanus* de Vis.

**TIBIA.**—The distal fifth or less of the right tibia. Unfortunately this second example of the tibia adds nothing to our information about this smaller *Jabiru* than that it attained a rather larger size than the tibia already described warranted us in attributing to it. In that bone the greatest width across the trochleas was 14 mm., in the present one it is 15 mm., and all the parts of the bone are proportionately larger. It is not thought at all necessary to give a figure of it. Locality, Wurdulumankula.

### *XENORHYNCHOPSIS* n.g.

The differentiating features which seem to demand the separation of this genus from *Xenorhynchus* consist,—(i.), in a peculiar addition to the tuber which at the distal end of the tibia increases the articulating surface of the fossa for the reception of the intercondylar process of the tarsometatarsus. The tuber itself (Plate I., fig. 6 A, B, C) is much as in *Xenorhynchus*, but proximad of it rises a short thick subpyriform tubercle (fig. A. (a)), which, as it were, forms a buttress to the base of the tuber;—(ii.) of a different form of the condylar surface viewed end on (fig. B.); that of the new genus being shorter in proportion to its breadth, and having its inner trochlea (fig. B (a)) relatively much smaller than and more remote from the outer;—(iii.) in the scar on the outer surface of the shaft near the malleolus in *Xenorhyn-*

chopsis being a long groove (fig. C (b) extending distad to the middle of the side of the malleolus.

Of these Jabiru-like birds, there seem to have been two species, a larger and a smaller.

#### XENORHYNCHOPSIS tibialis n.s.

From this species we have two examples of the distal ends of tibiae of opposite sides. That from the right leg, the one figured, is from a bird as nearly as possible equal in the size of the part to an ordinary Jabiru of to-day. The left tibia is from a rather large individual, but is rather more imperfect, and has no part of the shaft attached. Locality of both examples, Lower Cooper.

#### XENORHYNCHOPSIS minor n.s.

TIBIA.—Distal end of a right tibia (Plate II., figs. 1 A, B). Since individuals of the present Jabiru do not vary very much in size, it would not, without reason to the contrary, be right to assume that an extinct bird of the kind did so. Necessarily, then, a bone indicating an individual only two-thirds of the dimensions of *Xenorhynchopsis tibialis* must be taken to represent a second species. The malleoli of the *Xenorhynchopsis tibialis* tibia measure at their widest extent 19.5 mm., those of the present bone 13 mm. The shaft of the latter shows an even greater difference, being but 7 mm. against 10 mm. in *Xenorhynchopsis tibialis*. A specific character still less open to doubt is the form and extent of the lateral groove (Fig. 1 Ba), which is relatively much shorter and more oblique. Locality, Unduwampa.

TARSOMETATARSUS.—Imperfect trochleas of the right foot (fig. 1 C). This bone, which indubitably belongs to the *Ciconiidae* and does not belong to *Antigone*, can only be referred on account of its size to *Xenorhynchus nanus* or *Xenorhynchopsis minor*. In the shattered state of the fragments, it is impossible to place it in the latter genus with certainty, but the balance of probabilities seems to incline that way. Locality, Wurdulumankula.

### FAMILY IBIDIDÆ.

#### IBIS (?) conditus n.s.

FEMUR.—A left femur injured in the head, neck, trochanter, and both trochleas (Plate II., fig. 2 A, B).—Notwithstanding the damages the bone has suffered it retains enough character to show that it formed part of one of the *Ibididæ*, for to this family we are led by the absence of a pneumatic foramen, the presence of a moderately raised trochanter, and by its relatively stout proportions. In these it is assimilated to *Carphibis spinicollis* rather than to any other member of the family available for comparison. It is slightly shorter than in a small example of that

species, but no slenderer in the shaft; the head and neck are considerably narrower, the tubercle for the loop of the biceps cruris, present in other *Ibididæ*, appears in this species to be nearly obsolete, scarcely marked off from the outer condyle, but the median tubercle (Fig. 2 Ab), proximad of the popliteal space, is largely developed, and is followed distad by a sharply curved line partially enclosing a low eminence, an arrangement which does not appear to occur in other Australian members of the family. The foramen beneath the neck is minute. Locality, Wurdulumankula.

This species is placed in the genus *Ibis* provisionally. It will probably not remain there when its structure is better known.

### FAMILY ANATIDÆ.

To judge from the contents of the collection under study, Swans were among the more numerous of the birds that frequented the old lake; next to the Cormorants they were the most numerous. Their bones are seventeen in number. There appear to have been two species—a rather dwarfish one, which can hardly be separated generically from the present black swan, and a portly one which has claims to be brought apart in a generic niche of its own. The bones which may be brought forward in support of its claim are these: the coracoid, humerus (two)—radius, and ulna of the wing; the femur (two), tibia, and metatarsus of the leg. These it is proposed to notice under the name

#### ARCHÆOCYCNUS lacustris n.g. and sp.

**CORACOID.**—Distal half or less of the coracoid of the left side, minus the external angle of its base (Plate III., fig. 1 AB). The supracoracoideal surface (Ab.) is separated from that external to it by a longitudinal ridge, which is much more convex and pronounced than that in the Black Swan, *Chenopsis*, and does not bear on its summit a raised limiting line of muscular attachment. The articulating surface for the groove of the sternum is more concave, and notwithstanding that it is a little imperfect at both ends, markedly greater in both its dimensions. The oblique ridges on the visceral surface of the bone are less regular and numerous, thinner, more sharply raised and less continuous. The breadth of the shaft at its point of fracture is sensibly the same as in *C. atrata*. Locality, Lower Cooper.

So far as the structural characters of a coracoid allow one to judge, we may suppose this swan to have had a broader and deeper breast, itself indicating a larger body than the present one, but, perhaps, no greater power of wing.

**HUMERUS.**—Two distal ends, a right and a left, of this bone (Plate III., fig. 2 A and B) are distinctly those of a swan, but unfortunately are not sufficiently perfect to afford us as much information as we could wish. They differ not a little in form from the recent



bone, in which the entepicondyle is prolonged distad so far as to give to the distal contour of the bone an approximate squareness, which is altogether wanting in the fossil. The radial tubercle (trochlea radialis) (c) is comparatively small in the extinct bird, and the m. probrachialis impression is much deeper. A tubercle for the insertion of ligament (Fig. A a) rises proximad of the entepicondyle in *P. lacustris*, in the living bird the insertion is into an oval depression on the unraised surface of the bone. In size these bones do not exceed the dimensions of large examples of *C. atrata*. Localities, Lower Cooper and Kalamurina.

**RADIUS.**—Proximal fourth of a right radius (Plate III., fig 3). This has all the distinctive marks of a swan's radius, which can hardly be mistaken for that of any other bird of similar size. It is clearly not that of *C. atrata*. Its shaft is equally strong, but its articulating cup (Fig. 3B) is smaller. The shaft also differs in form, being more distinctly trihedral. Locality, Wankamamina.

**ULNA.**—Plate III., fig. 4.—Distal third of a right ulna. This, in its present abraided condition, is scarcely distinguishable from that of *C. atrata*, and suggests nothing worthy of record.

**FEMUR.**—Plate III., fig. 5.—The proximal three-fourths of a right femur recognizable by means of its size and proportions, and by the presence of the small round foramen a short distance distad of the neck on its postaxial surface. The head and adjacent part are much corroded, and fail to yield any information. The shaft is considerably stouter than in a large *C. atrata*. There are remains of a well-developed pectineal tubercle. The linea aspera is a very low rugose ridge. Locality, Undwampa.

The proximal half of a left femur of similar size has on the post-axial aspect the uneven surface beneath the trochanter as well pronounced, but of a different pattern, to that of the present swan. The adductor magnus limiting ridge is in this example extant. Locality, Lower Cooper. These leg bones indicate a heavier bird than the present swan.

**TIBIA.**—A distal half of a left tibia (Plate III., fig. 6 A b). The shaft is equal in breadth to that of a large *C. atrata*, but the depth across the outer condyle (Fig. B) is much less, and the two condyles are of the same length or very nearly so; the bridge over the ext. dig. communis tendon (Fig. A b.) is much narrower. In other respects the bone resembles that of *Chenopsis*. Locality, Malkuni.

**TARSOMETATARSUS.**—Plate III., fig. 7 A, B.—A proximal end from the left foot, the same size as in a female of *C. atrata*. The ridge for the tendon Achillis is missing (Fig. 7A a), the other ridges (b c) separating the grooves for the deep peroneal and flexor profundus are better developed than in the recent swan. Part of the insertions of the tibialis anticus are evident in front; the



articulating surface for the outer malleolus (Fig. 7B a) is somewhat more extended ventrad. Locality, Wurdulumankula.

VERTEBRA.—A moiety of a cervical vertebra, very imperfect, merely preserving the centrum and neural arch in part.

In the large and deeply locked sternocoracoidal joint, in the obliquity of the entepicondyle of the humerus, the presence of the isolated tubercle proximad of it, and the smallness of the radial condyle, in the trihedral form of the shaft of the radius and relative smallness of its head, in the absence of a definite linea aspera from the femur, and in the strength of the ridges protecting the passage of the flexors of the foot, we may, in these differences taken together, see reason to believe that these bones would be wrongly ascribed to a *Chenopsis*.

#### GENUS CHENOPSIS.


##### CHENOPSIS nanus n.s.

CORACOID.—Plate II., figs. 3 A, B.—Proximal three-fourths of a left coracoid  $7\frac{1}{2}$  mm. broad across the shaft. In an ordinary black swan the shaft is at the least 11 mm. in breadth. The fossil therefore represents a bird rather more than two-thirds of the size of the living species. It has all the well-known features of a swan's coracoid, and offers nothing but size as a means of discrimination. Locality, Lower Cooper.

HUMERUS.—Plate II., fig. 5.—Distal fifth of a right humerus,  $22\frac{1}{2}$  mm. in its greatest breadth, against 26 mm. in the smallest humerus of *C. atrata* available. The ulnar tubercle (trochlea ulnaris) (fig. a.), and the radial (trochlea radialis) (fig. b.) are both relatively small, the ectepicondyle is at its proximal end much less prominent, the probrachialis impression (fig. c), more contracted and deeper. Most of the postaxial surface of this bone is lost. Locality, Lower Cooper.

TIBIA.—Plate II., fig. 6.—Distal fourth of a left tibia about 2 mm. narrower at the joint than the least breadth in the Black Swan, but as much broader in the shaft at its point of fracture. The bridge over the extensor tendon is broader than in *C. atrata*. Locality, Lower Cooper.

TARSOMETATARSUS.—Plate II., fig. 7.—Distal half of the bone of the left foot, the trochleas very imperfect. The osseous bridge between the third and fourth metatarsals in place; the shaft wider by 1 mm. at its point of fracture than in *C. atrata*. From this measurement and from the presence of a line of junction on the shaft between the third and fourth metatarsals, it seems quite possible that this bone may be from a young *Archæocynus lacustris*. Locality, Malkuni.

 Distal half from the left foot; no bridge between the third and fourth metatarsals; line of junction between these metatarsals

not obliterated; breadth of shaft  $7\frac{1}{2}$  mm. Locality, Wurdulmankula.

PELVIS.—Plate II., fig. 4.—Mesial part of the axis of a pelvis comprising the ischiadic, sacral, and many of the postsacral vertebræ, too imperfect to yield any characters of specific value. Locality, Unduwumpa.

*BIZIURA exhumata* de Vis.

HUMERUS.—Plate IV., figs. 1 A, B.—Proximal half of left humerus. Compared with the humerus of *B. lobata*, the following differences are manifest: The bone is larger, but not greatly so; the incisura capitis (fig. B,a.) is narrower, the capitum (figs. A and B b.) is more globular, the notch between it and the tuberculum externum (fig. A,c.) deeper; the crista superior (figs. A. and B,d.) is stronger and higher; the pneumatic foramen larger, and its lip (proximad) more arched; the shaft is 1 mm. broader, but is not thicker. Locality, Malkuni.

TIBIA.—Plate IV., fig. 2.—Distal half of a right tibia. The only prominent feature differentiating this from the corresponding part in *B. lobata* is the comparative shortness of its intercondylar sulcus; were it from the opposite side, it would make a perfect joint with the tarsometatarsus of the bird from the Darling Downs, elsewhere described. Locality, (?)

PELVIS.—Plate IV., fig. 3.—A large part of the preacetabular region of a pelvis forward from the fore edge of the right acetabulum, but without the iliac fovea. The vertebral hypapophyses form a deep keel, having its edge undulated, but not interrupted or pierced with foramina; length from edge of acetabulum 47.5 mm. Locality, East of Pirani.

It is curious that the musk duck, now one of the most solitary of the whole tribe, should be found associated with so many other waterbirds, both in South Australia and Queensland. One is tempted to think that the habit of isolation, so marked in the living species, is a symptom of generic decay, a decay which our occupation of its haunts will rapidly turn into extinction.

*ANAS gracilipes* n.s.

CORACOID.—Plate IV., fig. 4 A, B.—A fairly well preserved left coracoid, 38 mm. in length, similar in size and proportions to that of *Anas* (*Nettion*) *castanea*, from which it differs in the following points: The acromial process (fig. 4a.) is much slenderer; the humeral facet or glenoid cavity is concave dorsad, but convex ventrad; the scapular facet is deep and cuplike; the visceral surface of the base of the shaft is traversed by two oblique ridges, which are continuous (fig. 4c); the articulating surface for the sternum is but slightly reverted at its inner end (fig. 4b.). Locality, Lower Cooper.

TARSOMETATARSUS.—Plate IV., fig. 5 A, B.—A bone of the right foot, 35 mm. in length. This is somewhat (1 mm.) shorter than the smallest corresponding bone of *Anas punctata* with which it may be compared. Though evidently related, the two bones differ much. The shaft of the fossil is broader in the middle than the other, and consequently its edges are more nearly parallel one to the other. Its trochleas are narrower and longer; the third (fig. 4a.) is produced beyond the fourth; the second rises from the shaft in a long ridge proximad. The longitudinal ridges on both aspects of the shaft are very prominent, indicating much more capacity for an active employment of the foot than is given to the living bird. Locality, Kalamurina.

ANAS (NETTIUM) strenua n.s.

HUMERUS.—Proximal four-fifths or somewhat less of a left humerus (Plate IV., fig. 6). As this bone approaches in form most nearly to that of the Teals among recent ducks, it may be consigned temporarily to the genus *Nettium*. In dimensions it agrees with the humerus of the Shoveller, *Spatula rhynchotis*, but from this it diverges in the direction of the Teals in its relatively small capitum and in the shape of its pneumatic foramen, whose opening is less rotund and more lenticular. Length, 62 mm.; breadth across the proximal end, 18 mm. Locality, Patteramordu.

Distal third or less of a left humerus, which may possibly have belonged to the preceding. This part of the bone is also in agreement as to size with the part in *Spatula rhynchotis*, but is at once differentiated from it by the inferior size of its trochleas, especially that of the radial (Plate IV., fig. 7a.), and by the depth and length of the sulcus between the trochlea and the adjacent epicondyle (b). Locality, Patteramordu.

NYROCA effodiata n.s.

HUMERUS.—Plate IV., fig. 8.—Extreme distal end of the right humerus of a duck of small size. Though more nearly approaching to the hardhead (*Nyroca*) than to any other living duck, the propriety of adding it to that genus is doubtful, not so much on account of inferiority in size, and consequently great inferiority in that respect to its contemporary *N. robusta*, but because of a somewhat different shape of the bone on its ulnar extremity. This is more produced distad in *N. australis*, the ulnar condyle and its epicondyle forming an oblique instead of a right angle with the long axis of the shaft. The probrachial impression, of which part is preserved, extends distad beyond the proximal end of the radial condyle, and it is separated from the tendon facet distad of it by a narrow and rather high ridge (a), the tendon facet itself is concave, as in *N. robusta*, not flat as in the living *Nyroca*. The greatest breadth



of the fossil across the condyles is 11.25 mm., against 12.75 in *N. australis*. Locality, Wurdulumankula.

*NETTAPUS eyrensis* n.s.

**HUMERUS.**—Plate IV., fig 9.—Distal third of right humerus. The first evidence of the antiquity of the Pygmy Geese which has occurred to me. It is but a small fragment, but it retains enough character to shew its affinity with the genus and distinctness from the living kinds *pulchellus* and *albipennis*. It may be recognised by the form and direction of the probrachialis impression (a), which in the living birds is broad and inclined but little from the longitudinal axis of the bone, this in the fossil is a long narrow tract much inclined to that axis. Between the distal ends of the tract and the radial condyle is a distinct smooth transverse concavity (b), which, in the recent bone, is not found, and beyond the end of the tract on the entepicondyle is a round scar (d) for insertion of ligament, replaced in recent bones by an imperfectly flat surface. The old pygmy goose appears to have been of the same size as *Nettapus albipennis*. Locality, Lower Cooper.

**CORACOID.**—Plate IV., fig. 10.—Fragment of upper end and part of shaft of a right coracoid of a *Nettapus*, which accords in size with the humerus above described. With the exception of the tip of the acromoidial process, the bone, so far as it goes, is fairly entire. Locality, Lower Cooper.

FAMILY STEGANOPODES.

*PELECANUS grandiceps* n.s.

**QUADRATE.**—Except for the loss of the orbital process, a fairly well preserved bone of the left side (Plate V., fig. 1 A, B). This must have been derived from a distinctly larger bird than the present *P. conspicillatus*. At its base along the mandibular articulation, it measures 26.5 mm., the quadrate of the living bird only 22mm. Its height from the anterior end of the base to the end of the surface for the squamosal, is 36 mm. against 30.5 mm. in *P. conspicillatus*. The head of this fossil pelican was therefore one-fifth longer than that of the present one. It would probably be about 21 inches in length (534 mm.) Structurally, it of course much resembles the quadrate of a modern representative of the genus, but there are peculiarities about it which may be thought to shew that it is not identical with any of them. The surface of the bone is thrown into much deeper tracts and higher ridges. The cavity for the pterygoid articulation (c) is on its inferior margin scarcely delimited, the ridge of the orbital process (d) failing to descend upon the anterior end of the mandibular process, and so separate the cavity from the outer surface. The foramen at the

middle of the base of the orbital process externally is comparatively very small; the squamosal articulation very broad. On the hinder surface of the bone, a little below the squamosal process, low ridges, which proceed from each end of that process, meet and form together a descending ridge. Locality, Lower Cooper.

CORACOID.—Plate V., fig. 2.—A fragment of a left coracoid exhibiting a great part of the precoracoid process, with the foramen for the supracoracoideus nerve, evidently from a large pelican, but too scanty to supply further information. Locality, Lower Cooper.

TARSOMETATARSUS.—Plate V., fig. 3.—Part of the distal end of a left tarsometatarsus, shewing the third and most of the fourth trochleas. The third trochlea is 19 mm. long, in *P. conspicillatus* it is at the most 17 mm. It seems to have been of nearly the same form from its proximal end, where, between the rotular prominences, it commences in a shallow, but distinct cavity. Locality, Lower Cooper.

#### PELECANUS proavus de Vis.

FEMUR.—The distal end of a right femur entire on the trochlear aspect, imperfect on the preaxial (Plate V., fig. 4); in general configuration premonitory of modern pelicans, in size, 29 mm. across the trochleas against 30.5 mm. in an average example of *P. conspicillatus*. It is in the inferior size of the trochleas that the most striking difference presents itself; in *P. conspicillatus* the longitudinal extent of the ulnar is 21.5 mm., of the radial 16.5; in the fossil the ulnar is 18, the radial 14.5. There is also a large difference in the condition of the ectepicondylar region; in the extinct bird it is comparatively narrow and rather deeply sunken between the trochlea and the ectepicondylar edge, the cavity formed extending distad nearly two-thirds of the length of the trochlea (fig. A,a). In the living pelican the surface is convex to near the proximal fourth of the trochlea, where a comparatively small cavity is situated. Locality, Lower Cooper.

TIBIA.—Distal end of a right tibia (Plate V., fig. 5). With the exception that the bridge over the ext. dig. com. tendon has never been completed, there is nothing in this fragment to distinguish it from a corresponding fragment from the extinct pelican. Locality, Lower Cooper.

#### PLOTUS laticeps n.s.

CRANIUM.—Short of all accessories (Plate VI., fig. 1). Compared with the cranium of *P. novæhollandiæ*, the following measurements are significant of specific difference:—

|  | Fossil.  | <i>P. novæhollandiæ</i> |
|--|----------|-------------------------|
| Total length from occiput to frontonasal suture .. | 49.5 mm. | 48.0 mm                 |
| Greatest breadth .. .. .                           | 24.5 ..  | 23.0 ..                 |
| Breadth of frontonasal joint .. .. .               | 11.0 ..  | 8.5 ..                  |
| Breadth of basioccipital .. .. .                   | 8.5 ..   | 7.0 ..                  |
| Length of basioccipital .. .. .                    | 11.0 ..  | 10.5 ..                 |



Apart from these varying proportions, there does not seem to be more than one remarkable difference between the extinct and living Darters. The interorbital depression of the frontals is in the fossil a well-marked groove extending caudad beyond the middle of the cranium. Also the presphenoid rostrum is higher and much stronger than it is in the recent bird. (Plate VI., fig. 1a).

As this cranium is in all its dimensions somewhat larger than that of *P. novæhollandiæ*, it prohibits us referring it to the small species previously described *P. parvus*. Locality, Lower Cooper.

PELVIS.—Plate VI., fig. 2A, B.—This is from the pelvis of a *Plotus*, but it is quite uncertain whether it came from the species abovenamed or from *P. parvus*, or from any other species. The only thing that can be said on the point is that it is not from a pelvis of *P. novæhollandiæ*. As will be seen from the figure, the fossil is little more than the præacetabular vertebræ, with remains of the interacetabular part of the ileum, and deprived of its hypapophysial foramina. Locality, Lower Cooper.

#### PHALACROCORAX gregorii n.s.

PREMAXILLARY.—Plate V., figs. 6 A, B.—Entire from tip to the nasofrontal suture. Its length to the nasofrontal joint is 80 mm., its width at the joint, 17 mm. The nearest approach to this mandible is found in *P. carbo*, which has a length of 68 mm., with the same width of 17 mm. There is nothing in the fossil to prove its specific distinction from *P. carbo*, except that it is longer in proportion to its breadth, and this, in the bill of such a bird, is an insufficient trait. Its non-identity with the living cormorant of southern waters depends on that of the numerous bones associated with it. Locality, (?). Collected by H. Y. L. Brown, Esq., Government Geologist.

CORACOID.—Plate VII., fig. 1 A, B.—Proximal half of right coracoid, minus the summit of the acromium. This is in size about the same as in *P. carbo*, but conspicuously differs from the recent bone in the size and form of the facets for the humerus and the scapula, the last especially. This is a deep cup-shaped cavity, occupying the whole of the articular surface of the precoracoid process. The pad for the head of the humerus is quite differently proportioned, being much broader, though not greatly longer, than in *P. carbo*. In the recent bone there is an inframarginal groove from the proximal end of the humeral pad to the tip of the acromium on its outer surface, this in the fossil is a low ridge running proximad further from the edge. The shaft just below the scapular articulation (Fig. A,d.) is thicker and flatter than in recent Cormorants. Locality, Wankameminna.

To this proximal half may probably be added a distal two-thirds of the same side largely defective at its outer angle and rather slenderer in the shaft (fig. B.) Its generic status is made

known by the extent to which the inner edge of the base overlaps the edge of the sternum when it is in place, but the transverse extent of the overlapping is apparently shorter than in living Cormorants, as short, indeed, as in *Plotus*. Locality, Lower Cooper.

**HUMERUS.**—Plate VII., fig. 2 A, B.—Proximal two-fifths of a left humerus, fairly well preserved, its worst injury being the loss of the proximal border of the pneumatic foramen. The bone is, on the whole, very similar to that of *P. carbo*, but the following differences are observable: The capitum is shorter, and is more distinctly marked out by greater depth in the incisura capitis on the one side (fig. B a.), and in the space ventrad of the tuberculum externum (fig. B b.) on the other. The whole of the bone is narrower in proportion to its length. Locality, Malkuni.

Distal four-fifths of a right humerus, in good preservation, of the same length as in *P. carbo*, but with a slenderer shaft. The probrachialis scar (Plate VII., fig. 3 B a.), which in *P. carbo* is interrupted in the middle, is in this continuous or nearly so; the proximal end of the ulnar condyle (fig. B b.) is more deeply incised on its ventral side, and the proximal edge of the incision is sharp; the entepicondyle (c.) is shorter and more tumid, the ridges on the postaxial surface (A a.) are sharper, the grooves between them broader and deeper. Locality, Kalamurina.

Distal two-thirds of a right humerus, fairly well preserved, in this the probrachialis scar is continuous. In other respects, it is similar to the preceding. Locality, Lower Cooper.

Distal half of a right humerus, scar continuous, postaxial surface of joint abraded, otherwise as before. Locality as preceding.

Shaft of a right humerus. Locality, Malkuni.

Distal fourth of a left humerus, well preserved. Locality as last.

Distal fourth of a left humerus, also well preserved. Locality, Lower Cooper.

**CARPOMETACARPAL.**—Entire length of a carpometacarpal of the right side, somewhat longer (by 2 mm.) and slenderer than that of *P. carbo*. The rotular groove of the proximal articulation is narrower and the cavity at the anterior side of the conical process on its ventral aspect is broader and deeper. There are numerous points of difference in the sculpture of the two bones, but these cannot be explained without dwelling to an unjustifiable extent on minute detail; some of them are apparent in the drawing (Plate VII., fig. 4). Locality, Lower Cooper.

Fragment from the preaxial side of the carpometacarpal joint, consisting of the carpal process for the pollex metacarpal, and part of the rotular groove. This conveys no further information. Locality, Malkuni.

**FEMUR.**—A left femur, nearly entire; shorter by 3 mm. than a *P. carbo* femur, and with narrower ends, it is yet of the same

measurement in the shaft. Were it not for this difference in proportions, I should not hesitate to attribute the bone to *P. carbo*, so close is the resemblance between them. Locality, Wurdumankula.

A left femur of the same length, but rather slenderer and imperfect at both ends, in no important point differing from the preceding. Locality, the same.

Proximal half of a left femur, capitum imperfect, in this the neck is shorter and the capitum larger than in *P. carbo*, there is also a difference in the sculpture of the bone on the outer surface behind the trochanter; besides the depressions seen in *P. carbo*, there is a large and deep one distad of the rest on the edge of the postaxial side. Locality, the same.

Nearly entire length of a left femur of the same dimensions as the first of this series, notable for the small extent but great depth of the hollow space usually occupied by the pneumatic foramen. Locality, Malkuni. (Plate VIII., fig. 1 A. B.)

Nearly the whole length of a right femur, capitum and distal end imperfect, sculpture behind trochanter sharply defined, shorter but not less strong in the shaft than the first of the series. Locality, Lower Cooper.

Proximal five-sixths of a right femur. In this the neck is narrow, long, and unusually straight sided. The whole is apparently too much shorter than the other femurs to be confidently referred to *P. gregorii*. Locality, Malkuni.

Proximal five-sixths of a left femur, incapable of adding to our information. Locality, Malkuni.

**TIBIA.**—Proximal half of a right tibia (Plate VI., figs. 4 A, B). This bone yields satisfactory evidence that those of the preceding ones, which appeared to be almost referrible to *P. carbo*, were not derived from that species, unless, indeed, further evidence should establish the fact that *P. carbo* was in existence in company with species now extinct.

From the figures given, it will be seen that in the present species the fibular crest or process (a) takes its origin much nearer to the proximal end than in *P. carbo*, is more incurved on its hinder edge, and consequently forms a deeper sulcus between it and the tibia proper. The anterior crest (b) is far less elongate. The whole articular surface is wider, although much shorter; the anterior half of the double cavity (c) for the inner condyle of the femur is a circular and comparatively deep basin. Locality, Malkuni.

Distal five-sixths of a left tibia (Plate VI., figs. 5 A, B.). The fibular process does not extend so low distad as in *P. carbo*, and subsides gradually instead of ending quite abruptly and forming a hook at its distal end. The bridge over the extensor com. dig. tendon is stronger, but the outlet over which it arches is less spacious. The inner malleolus is narrower, the sides of the outer one parallel. Locality, Lower Cooper.



Distal two-thirds of a left tibia. This as far as it goes, has all the characters noted in the preceding. Of its specific identity with it there can be no doubt. Locality, Lower Cooper.

Distal fifth of a left tibia, with the same characters as the preceding. Locality, Malkuni.

TARSOMETATARSUS.—Distal two-fifths of a left one, wanting the fourth or outer trochlea. (Plate VI., fig. 6.) As commonly in these ancient birds, the ridging and grooving of the bone are accentuated. Witness the deep groove between the second and third metatarsals (D a.) of which there is scarcely a suggestion in *P. carbo*. The trochleas are comparatively small, the second especially so, when seen from the inferior surface of the foot. Locality, Malkuni.

Right metatarses nearly entire, but in bad condition, apparently from exposure before burial. Fortunately, the only part missing is a little of the distal end of the plantar process (Plate VIII., figs. 2 A, B, C.). The articular surfaces for the tibia, especially that for its inner condyle, are narrow and shallow (c). The intercondylar process, compared with that of *P. carbo*, is pointed and subangular; the plantar process is comparatively thin, though not less extended in either direction, the tendo achillis passed through a complete tube (b). There is no distinct groove for the flexor profundus, the groove for the deep peroneus is broad and shallow; the trochleas are narrow and sharp edged; the shaft slender, though the bone, as a whole, is equal in length. Locality, Wurdulumankula.

Shaft of a left tarsometatarses, wanting the distal end and most of the proximal. Ridges of extensor anterior surface more developed than in the preceding. Locality, Malkuni.

Right tarsometatarses, wanting the distal end, tendo achillis groove tubular, extensor ridges well developed. Locality, Lower Cooper.

Left tarsometatarsal, wanting most of proximal end. Length, 64.5; breadth, 7 mm. Locality, Lower Cooper.

Right tarsometatarses, wanting the plantar process. Length, 61; breadth, 8 mm. Locality, Lower Cooper.

It is doubtful whether the last two bones belong to this species. If they do, this cormorant must have varied very much in size. The last especially has an unwontedly massive appearance.

PELVIS.—The middle and more solid part of a pelvis (Plate VI., figs. 3 A, B), comprising a portion of the foveæ iliacæ anteriores (fig. A a.), the acetabula (fig. A b.), and antitrochanters (fig. A c.); the iliac recess of the right side (Fig. B a.), three crural, the ischiadic sacral and post sacral vertebrae.

It would seem to be almost impossible to err in referring this pelvis to the genus of the Cormorants, so well characterised are they, and in distinguishing it from the pelvis of living species,

even from that of *P. carbo*, with which in mere size it agrees best. Across the antitrochanters it measures 34 mm., that of *P. carbo*, 36.5 mm. On the dorsal surface, the neuropophysial ridge over the anterior iliac fovea is thin and sharp (fig. A.). There are no intervertebral foramina further forward than the hinder end of the antitrochanter, and what there are, are quite small; the antitrochanter is a large dice-box-shaped abutment, ending posteriorly in a broad, flat, semicircular area, to which there is a distant approach in *P. stictocephalus*, but not in *P. carbo*. On the ventral aspect the hypopophysial floor of the ischiadic vertebræ is transversely deeply concave, that of the sacral and postsacral vertebræ retains its breadth to a large extent as it approaches the caudal. Laterally, the antitrochanter is seen to be very broad, as is also the space between it and the inner edge of the obturator foramen. Locality, Lower Cooper.

From the same locality are a fragment with a right acetabulum and part of the antitrochanter, the ischiadic vertebræ and a portion of the anterior iliac fovea on both sides. A third small fragment has preserved only the acetabular region of the left side. Locality, Lower Cooper.

A fourth is the left side of the middle region of a pelvis with its acetabulum, and a fifth is merely the postsacral series of vertebræ.

From Mulcani, we have another mesial fragment with both acetabula, a similar example from Wurdulumanakula, and the ischiadic vertebræ of a pelvis from Kalamurina.

#### PHALACROCORAX vetustus n.s.

The collection contains many bones of a Cormorant of smaller size and slighter build than *P. gregorii* or *P. carbo*, about intermediate between them and *P. stictocephalus*.

CORACOID.—Proximal three-fifths of a right coracoid, entire, except for a little damage to the acromion (Plate IX., figs. 1 A, B, C.). The unlikeness of this to the coracoid of *P. gregorii* is great. The large humeral facet is replaced by one of normal size, the scapular facet is similar to that of *P. carbo*, as is also the form of the acromium, while the shaft is vastly inferior in size. From *P. carbo* it further differs in the sharpness of all its features. Locality, Malkuni.

Proximal three-fifths of a second right coracoid, wanting most of the acromial process. This is so entirely alike to the other that it suggests nothing further which can be said about it. Locality, the same.

Distal three-fifths of a left coracoid wanting the external angle (Plate IX., fig. 2). The slenderness of the shaft differentiates this bone from *P. carbo*, the same character and the narrowness of its sternal facette (b) from *P. gregorii*. Locality, Kalamurina.



**HUMERUS.**—Proximal third of a left humerus (Plate VIII., figs. 3 A, B). In addition to greatly inferior size, the following differences from the humerus of *P. carbo* are noticeable in this bone: Both the superior and the inferior crests are less developed, and this proximal region of the bone is therefore proportionately narrower, the ridge ventrad of the latissimus dorsi is more pronounced, the surface on each side of it being hollower, and the arch over the pneumatic foramen is much lower. Locality, Malkuni.

Proximal half of a left humerus, damaged on both crests and on arch of pneumatic foramen, shaft a little stronger than that of the preceding example. Locality, Malkuni.

Proximal sixth of a left humerus, inferior crest and arch of pneumatic foramen destroyed. Locality, Malkuni.

Distal third of a left humerus, both condyles are short fore and aft, and the ulnar is narrow transversely (Plate VIII., fig. 4). The probrachialis insertion is broad, and almost interrupted. Locality, Kalamurina.

Distal fourth of a left humerus; except that the condyles are longer fore and aft, this presents no important difference from the preceding. Locality, Malkuni.

Distal third of a right humerus; the probrachialis insertion is scarcely interrupted, the condyles, which are slightly abraded, are small. The ridge from the distal end of the probrachialis insertion to the radial condyle is conspicuous. Locality, Kalamurina.

Distal five-sixths of a right humerus, the condyles of this are short fore and aft. The bone seems to have been much weathered before burial. Locality, Lower Cooper.

**ULNA.**—Proximal sixth of a right ulna (Plate IX., fig. 3), proportionate in size to that of the humerus. The end of the process rising towards the head of the radius turns suddenly dorsad from a sharp edge of division between it and the rest of the lip of the outer facet (fig. A a.), which is as hollow as that for the inner condyle of the humerus. These two facets are of equal breadth, and are separated by a short ridge. (fig. A b.), which is more sharply defined than in *P. carbo*. The olecranon is less developed. The groove for the lateral tendon immediately beyond the inferior edge of the bone is quite narrow, and the pointed space occupied by tendon distad of it (fig. A c.) is much more extensive. Locality, Malkuni.

Proximal half of a right ulna, wanting the olecranon and much weathered. Locality, Wurdumankula.

**CARPOMETACARPUS.**—Plate IX., figs. 4 A, B.—Proximal two-fifths of a bone from the right wing. The shaft of the third

metacarpal commences ridge-like, immediately distad of the conical process on the postaxial side of the head. This is the most obvious of the several means of distinguishing this bone from *P. carbo*. Size considerably less than in *P. gregorii*. Locality, Wurdumulankula.

Distal half of a left carpometacarpal (Plate IX., figs. 5 A, B). The junction of the third with the second metacarpal is much longer than in *P. carbo*. The distal articular surface is very similar to that of *P. carbo*, and in size it approaches very nearly to that of *P. gregorii*, to which, indeed, it might be referred, rather than to the present species. Locality, Lower Cooper.

Proximal end and part of the shaft of a left bone similar to the first. Locality, Malkuni. (Plate IX., figs. 7 A, B.)

Nearly complete bone of the right side, but minus the third metacarpal and with the distal articulation imperfect. This is a considerably smaller bone than the preceding, but on all other accounts cannot be separated from them. Locality, Lower Cooper.

FEMUR.—Plate VIII., figs. 5 A, B.—A right femur, entire but for the loss of a small part of the fibular facet of the outer condyle. Compared with the femurs of the larger cormorants, *P. carbo* and *P. gregorii*, the dimensions of this bone vindicate the belief that it belongs to a distinct species. In length, it is 51.5 mm., in the least breadth of its shaft, 5.3 mm.; in *P. gregorii* the length is 54.5 mm., the breadth, 6.5; in *P. carbo* the length is 58 mm., the breadth, 6.5 mm. The salient structural features of the bone are a thin, sharp, somewhat tortuous linea aspera (B a), and from the trochanter an extensor cruris ridge of the same character, a continuation of the ridge proximad in an oblique line on the shaft (B b), immediately proximad of the inner condyle, and the pit on the head for the interarticular ligament, as deep as in *P. carbo*—that is, much deeper than in *P. gregorii*. Locality, Malkuni.

A left femur, entire except for superficial injury to the head and condyles. The identification of this bone depends on size and proportions, which are very much the same as in the preceding case, but it is rather stouter in proportion to its length. Its ridges are not quite so pronounced, and the interarticular pit is shallower. Locality, Lower Cooper.

TIBIA.—Proximal half of a right tibia (Plate VIII., figs. 6 A, B, C), corresponding in size to the femur from Malkuni. Its inner crest (A a) is much deeper than in *P. carbo* or *P. gregorii*. The outer crest is much less expanded. As in *P. gregorii*, the articular surface viewed perpendicularly (C) is comparatively short, the crests being much less extended forwards. Locality, Malkuni.

Proximal third of a right tibia (fig. E.). Locality, Malkuni.

TARSOMETATARSUS.—Shaft of a left metatarsus (Plate VIII., fig. 7). The proportions of this bone are the only means of determining

its place to be in the present species. It is 55.5 mm in length, and 5.5 in least breadth, those of *P. gregorii* and *P. carbo*, 60 mm. in length, and 6 mm. in breadth. Locality, Lower Cooper.

Plate IX., fig. 6.—This is a coracoid unknown to the writer.

## SUB-CLASS RATITÆ.

### DROMAIUS patricius de Vis.

PELVIS.—The mesial vertebræ of a pelvis deprived of their neural arches and of almost all of their processes (Plate IX.). Remains of the last crural apophyses for junction with the ilium (a), and of the first sacral apophyses (b) are all that can be recognized. The first ischiadic apophysis forms, as occasionally in other birds, a junction with the last crural. The size of the fragment is, under these circumstances, the only guide towards a determination of its origin. A pelvis which in this part of it very much exceeds in size the corresponding part in the bulkiest of our carinate birds, the pelican for example, can only belong to one of the great flightless birds, the emu or cassowary to wit. So far as it shews, it might be either, but as no extinct cassowary is known as yet in Australia, it seems almost necessary to attribute the present fossil to the emu *D. patricius*. Locality, Wurduluman-kula.

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## FOSSIL VERTEBRATES FROM NEW GUINEA.

It is but rarely that we have opportunities of studying vertebrate fossils from New Guinea. It was therefore with eager acceptance that relics of the kind were received from the late Government Geologist, Mr. W. H. Rands, F.G.S., who had himself received them from Captain Barton, then Private Secretary to his Excellency the Lieutenant-Governor of British New Guinea. These fossils, which may possibly enable one to contribute a little to the slowly accumulating palaeontology of the Possession, are from Busai in Murua, an island otherwise known as Woodlark Island. Captain Barton, to whose acumen we owe the rescue of the fossils from destruction, informs us that Busai, a place-word not found on our maps, is the name of the southern part of the western half of the island, that nearly the whole of this western moiety is a coral covered plain densely clothed with vegetation, and that the island is on the south girt about with a fringing reef and defended by an outwork of barrier reef. The spot where the bones were exhumed he considers to be within the area of an old river bed. Immediately before his first visit to it, one of the miners who were successfully prospecting for gold in the alluvial of the tract, had in the course of his work thrown some of the fossils out of his shaft on to the mullock heap alongside. Fortunately, they were there noticed by Captain Barton, who at once appropriated them, and persuaded the miner to put aside any others he might disinter. On his return to Busai long afterwards he found that the promise had been kept, and that he was able to bring away other remains which have proved more instructive.

The living evidence given by Tree-kangaroos and Cassowaries that there was once an overland route by which beast and bird could pass between Australia and New Guinea, and the supporting testimony afforded by certain Australian fossils, have naturally begotten an expectation that sooner or later some characteristic member of the land or fresh water fauna, now extinct in Australia, would be forthcoming from the strata of the more northern island. It was therefore with a lively hope of meeting an old friend or two amongst these bones that the invitation to identify them if possible was accepted. The hope was premature. The native haunt of all the four or five animals represented by them was unmistakeably marine; the age of them in consequence not determinable by means of any instance of synchronism with the great Australian marsupials or their contemporaries, or, in the absence of stratigraphical data, definable by any term less vague than Quarternary or Tertiary. Whatever the age of this alluvium may be, and whatever the changes of level experienced by its bedrock, it is evident that at the present time it lies, as Captain Burton says, but little above high water mark. The bones were, in some instances encrusted with calcareous mud, in others the cavities were filled with sand, pebbles, and ferruginous concretions, mud and grit alike containing



debris of the molluscan genera *Nassa*, *Tellina*, *Arca*, *Venus*, and of other marine organisms. It is, however, extremely doubtful whether this alluvial deposit was the real matrix of the fossils, their uniformly gray tint is free from ferruginous stains, and their substance is densely mineralised. From whatever cause, it has apparently been found difficult to exhume them otherwise than in a shattered condition, and with the very undesirable result that connecting parts which, as recent fractures testify, were in place when the whole were disturbed by the pick, are now wanting. On fitting together all the fragments, which were amenable to the process, it became apparent that the largest piece so reconstructed was a portion of the skull of a dugong. This appears to be the first occurrence known of a *Halicore* proper in a truly fossil state, and it is to be hoped that its stratigraphical provenance will sooner or later be definitely ascertained, since any ray of light that can be thrown upon the history of this or any other genus of the *Sirenia* is of unusual interest. Meanwhile it is desirable to determine, if possible, the specific status of this particular dugong in answer to the question which at once rises, whether it is or is not an extinct form of its kind. Assuming that the dugong of the Red Sea, of the Indian Ocean and of Australian waters, are all three specifically distinct (an assumption which is extremely questionable), the writer cannot but regret that the Australian animal is the only one whose craniological characters are known to him. He would therefore decline to discuss the question raised were it not for the great improbability involved in a supposition that one of the western species, the Indian for example, might at some remote time have inhabited Australian seas also, left its bones on Papuan shores, and at last contracted its range under pressure of a new species evolved from itself or migrating from elsewhere. The thing is certainly possible, but too unlikely to invalidate the only means left of determining the question—a comparison of the fossil with the corresponding part of the skull of *Halicore australis*. The fossil figured on Plate X, consists chiefly of the angular hump formed by the deflected premaxillaries, which is so bizarre a feature in the foreskull of the dugong. The premaxillaries have been broken across in front, about half way up the muzzle, the surface of fracture displaying sections of the large enclosed tusks. Behind they have broken away at about a third of the length of their backwardly diverging processes which form the anterior margin of the narial orifice. To the left process is attached, as in the recent skull, that portion of the malar which bounds the orbit anteriorly; also remains of the lachrymal bone above it. On the oral or inferior surface behind the premaxillaries, the maxillary, preserved as far on the left side as the alveolus of the second malar, has been reinstated and, adjacent to that point, a portion of its malar process has also been restored to its place. A portion of a malar is the only fragment remaining isolated. Unfortunately,



no molar teeth are in evidence so far, and in the absence of the forepart of the muzzle the sex cannot be positively ascertained.\*

It is clear that from so small a portion of a skull an estimate of its distinctive characters, if any exist, must be founded mainly upon such peculiarities in its proportions as may be observable. Though it is pretty obvious to the eye that in general configuration it differs from the living species, the reality and extent of the difference will be more satisfactorily certified by a comparison between such measurements as the fossil affords, and corresponding measurements in a sufficient number of recent skulls. The measurements found available are the distance of the posterior end of the premaxillary suture from the lower end of the tubercle descending upon the anterior edge of the malar; the distance from the same point on the malar from a point on the aforesaid suture equidistant from the posterior end of the sutures in all the skulls compared; the distance of the end of the suture from the hinder edge of the malar process of the maxillary; the vertical depth of the rostrum measured at the end of the suture; the greatest breadth of the premaxillaries anteriorly to the end of the suture; the distance of the end of the suture from the line of maximum breadth; the least breadth of the malar process of the premaxillary. To these we may add the least depth and the least thickness of the malar. Throwing these measurements into a tabular form for more convenient reference, we have the following figures in millimetres :—

|  | Fossil. | RECENT SKULLS. |       |       |       |       |       |       |       |       |        |
|--|---------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
|  |         | No. 1          | No. 2 | No. 3 | No. 4 | No. 5 | No. 6 | No. 7 | No. 8 | No. 9 | No. 10 |
| Distance of posterior end of premaxillary suture from lower end of malar tubercle. . . . .               | 113     | 144            | 135   | 134   | 133   | 126   | 138   | 132   | 151   | 132   | 125    |
| Distance from malar tubercle to a point on suture equidistant from end of suture in all skulls . . . . . | 133     | 162            | 153   | 152   | 144   | 165   | 152   | 145   | 157   | 145   | 138    |
| Distance from end of suture to hinder edge of malar process . . . .                                      | 119     | 144            | 140   | 138   | 120   | 128   | 140   | 134   | 160   | 131   | 119    |
| Vertical depth of rostrum at end of suture . .   | 70      | 88             | 68    | 68    | 62    | 73    | ..    | 70    | ..    | 84    | ..     |
| Greatest breadth of premaxillaries . . . .   | 100     | 95             | 85    | 81    | 80    | 80    | 85    | 91    | 100   | 89    | 72     |
| Distance of greatest breadth from hinder end of suture . . . .   | 50      | 70             | 34    | 20    | 30    | 56    | 48    | ..    | 27    | 44    | 28     |
| Least depth of malar . .   | 37      | 34             | 36    | 30    | 30    | 35    | 42    | 38    | 37    | 43    | 37     |
| Least breadth of malar . .   | 15      | 20             | 19    | 18    | 20    | 21    | 18    | 21    | 23    | 21    | 19     |
| Least breadth of malar process of premaxillaries   | 43      | 39             | 37    | 36    | 35    | 38    | 38    | 36    | ..    | 42    | 32     |

\* From the size of the tusks as they appear in section, the animal was doubtless a male.

The general result of an inspection of these figures is that while the fossil is in certain dimensions in close accord with one or other of the recent skulls—sometimes of old males, sometimes of females—its measurements as a whole are quite different from those which obtain in *H. australis*. Perhaps the most strongly marked difference in the fossil is the comparative nearness of the fore end of the nares to the cheek bone, indicated by the first three measurements. This proximity is even greater than in No. 10, the youngest female of *H. australis* measured, while the breadth of the muzzle at its base and the strength of the circumnarial limbs of the premaxillaries, are only equalled in the oldest of living males. The physiognomy must therefore have been pronouncedly different, broader than the average *H. australis* and considerably flatter, with eyes nearer to the end of the snout. To the comparative massiveness of the skull, a feature also indicated by the data, there is, however, a rather remarkable exception apparent in the malar. The distal portion of this bone, wanting on the left side, is on the right present, but separated from the rest of the skull by the loss of its proximal portion. The tabulated measurements of the malar in recent skulls refer to its minimum depth and thickness only, and so fail to indicate its actual strength. This would not be much superior to that of the fossil, were it not that it is vastly increased by the development of a deep keel on its lower edge. Of this keel the fossil malar possesses merely a rudiment no larger than in an immature female of the present day. The conspicuous feebleness of the zygomatic arch in a skull exhibiting superior strength everywhere else may be related to the inferior leverage exerted by the less produced jaw, or possibly to less masticatory power being demanded by the sea grasses on which the creature fed. It will be seen, as well from the table of measurements as from the figure, that the premaxillaries anteriorly to the narial orifice are in the fossil broadest at the level of the nares, whereas in recent skulls their greatest breadth is across a lateral intumescence at some distance from the nares. As the intumescence is very feebly developed in the fossil, there ensues a considerable difference in the contour of the part. Viewed from above, the outline from the malar forward has an almost continuous trend towards the axis of the muzzle; in recent skulls it is so undulatory as to form a “line of beauty,” the only one attributable to the animal. In all available skulls of *H. australis*, the premaxillary suture is gaping, in the fossil it is closed and suggestive of greater compactness of the facial bones. On the whole it appears to the writer that there is sufficient reason for admitting a belief that this dugong was specifically distinct from any existing species, and consequently that the genus *Halicore* has had in the past a history of which we have now a slight insight, and may hope to obtain more. The most appreciable feature

in the small fraction of the skull which has so far been revealed, the shortness of the muzzle, prompts the suggestion that it might well bear the name of *Halicore brevirostris*. Accompanying the skull are part of the centrum of a vertebra and the middle portion of a rib, neither of them in any way instructive.

The Reptilian remains brought to light have been left by turtles and crocodiles, the former exemplified by eight pieces of carapaces and two of interior bones, all derived from a species of rather large size. The largest portion of a carapace preserved is 180 mm. long, with a greatest breadth of 120 mm.; a marginal piece attains a thickness of 25 mm. Most of these fragments bear ribs which did not nearly reach the outer edges of the test, and therefore must have come from something other than the edible and hawksbill turtles of the present day. They appear to be all from the same species, but from at least two individuals, if we may judge from the youthful appearance of three of them. Of the endoskeletal bones, one is the anterior portion of that part of the pelvis which includes the junction of the ischial and pubic bones. It is not dissimilar to, but is of considerably larger size than the corresponding part in *Chelone virgata*. The other is a humerus incomplete (Plate XII), in certain parts, but affording pretty exact measurements of length and breadth, from which it appears that it was a slenderer bone than that of either of the living species, whence we may infer that the anterior "flipper" was proportionately longer. Relying on this and on the abbreviation of the ribs as distinctive characters, it is proposed to label the chelonian bones *Chelone murua*.

The Papuan crocodile of the period is partially made known to us by dorsal scutes and vertebræ, and more distinctly by portions of a mandible (Plate XI). One of the latter, a bone which reminds all who see it for the first time of a piece of the rostrum of a sawfish, is a part of a mandibular symphysis 170 mm. long and 35 mm. broad in the middle, with its edges so nearly parallel that the difference in breadth at the two ends is but 2 mm. The two rami are so intimately conjoined that not a vestige of a longitudinal suture can be found anywhere. The lower ventral surface, on which are shallow, irregular, longitudinal, branching grooves, is slightly convex transversely at the fore end, and becomes more and more so caudad. The oral surface is correspondingly, but to a less extent, concave. On each edge are eight alveoli; in five of these are remains of teeth, exhibiting, in one case, the point of a supplanting tooth. The teeth are smooth, subequal in size, subcompressed, the long diameter of their oval section placed at right angles to the longitudinal axis of the jaw. They are directed outwards and forwards at a very open angle, and the bases of their sockets are approximate to the mid line of the symphysis. Judging from the subhorizontality of the fangs, the upward curve of the crowns was but slight. The posterior



end of this bone could not have been very far from the actual end of the symphysis caudad, yet it bears no trace whatever of the entry of splenial bones, their apparent absence being probably due to the same cause as the obliteration of the symphyseal suture. The second mandibular piece most probably formed a great part of the anterior moiety of the same symphysis, since in size, proportions, and structure, it resembles the posterior portion very closely. It has been split horizontally through the alveoli, of which seven only appear in the drawing of the inferior half, the base of an eighth at the anterior end being hidden from view. As the middle part of the bone and also some portion of it at each end are missing, its whole length must have been very much greater than 335 mm., and as sixteen teeth are indicated by the parts preserved, the number of the whole set must have been as great as in the Gavials. Further discovery may, indeed, shew that these mandibular remains belonged to two different individuals, a contingency hardly probable, but even then the presence of eight teeth in a portion only of a symphysis would make good a claim to membership in the family of the *Gavialidæ*. All things considered, it appears to the writer more likely that this Crocodile belonged, if to any existing genus, to the Indian *Gavialis* than to the Bornean *Tomistoma*, and to the former genus it is provisionally referred under the name *Gavialis papuensis*. The fossils under review came to hand in two lots at a long interval of time. Among the first comers were the two dorsal scutes shewn on Plate XIII., figs. 3 and 4. These appeared at the time to resemble the corresponding scutes of *Phylas johnstonii* so closely, differing from them no more than similar scutes from different individuals of that species varied from each other, that they suggested a possible explanation of the mystery of the isolation of the long-nosed crocodile in the fresh waters of Northern Australia, and were figured with that view. The advent of the mandible has put an end to all speculation in that direction, all the bones evidently belong to the same species. These scutes and the mandible very possibly belonged to the same individual. Not so, however, with a third scute. This is 75 mm. in breadth, a size which makes it probable that the species grew to a length of twelve or thirteen feet. The vertebræ are three presacral, one sacral, and two caudal, doubtless derived from the same skeleton, but all very imperfect and for determinative purposes useless. It is, indeed, only from the shape and proportions of the intervertebral surfaces of their centra that their position in the vertebral column can be made out. The only ichthyian relic is a vertebra of a large shark.

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## PAPUAN CHARMS.

A recent gift of this kind, received from Captain F. R. Barton, has led to a renewal of the interest felt in the charms previously collected in the Island, and brought from it hither. One, at least, of these, a shaped stone (Plate XIV), appears to merit some consideration on account of its unusual and possibly exotic form. The only information supplied with it is given by the attached label, which reads, "Sorcery charm, Mekeo," Mekeo being a village inland from Hall Sound, a little to the north of Port Moresby. The charm is biconical in shape, circular in section, 210 mm. in length, and 58 in maximum thickness; its material a coarse but very hard sandstone, shewing a few small enclosures of black shale. One of its conical portions is the longer, 125 mm., and tapers rapidly with an outline of increasing curvature to a rather sharp point. The shorter one contracts similarly, but to a much broader extremity. Over the line of junction of the two rises a strong annular ridge or flange, and the shorter one is on one of its sides channelled throughout its length by a broad shallow groove, which cuts through the flange and passes a little beyond it. It is highly improbable that a stone so carefully wrought should have been made expressly for magical purposes. Savage mummery does not call for the aid of art, but of artfulness. Still less likely is it that a stone prepared for sorcery usage should have accidentally received a form which eminently fitted it for a practical use. We have only to fit the butt end as far up as the flange will allow into a suitable perforation in a straight haft, insert a wooden wedge into the further end of the groove, drive it home, and we may go forth with a very effectively mounted club for hostile or pick for peaceful purposes—as, for example, sago extraction. Still another use appears to have been found, if not intended, for the implement. The surface of the extremity of its broad butt end has evidently been subjected to so much attrition that it has been worn down on one side to a smooth convex facette, with edges very obvious to the touch. It is plain that if this acquired surface be not an effect of natural causes, the stone has at one time been employed as a grinding instrument, in fact, as a pestle. Considered from this point of view, it has a remarkable resemblance to a pestle figured by Mr. S. Powers, in the United States Geographical and Geological Survey of the Rocky Mountains, Vol. 3, opposite p. 432, where, speaking of the Californian tribe of the Yokuts, on the slopes of the Sierra Nevada, in the vicinity of King's River and Lake Tulare, he has the following: "The few and simple



stone implements used by the Californian Indians resemble, in their main purpose and design, those of the extinct races exhumed in the shell mounds, only they are conspicuously ruder and simpler. Take the stone mortar, for instance. The prehistorical mortar is carefully dressed on the outside, and has three general shapes," which he goes on to specify. "But the Indian now takes a small boulder of trap or greenstone, and beats out a hollow in it, leaving the outside rough. Whenever one is seen in possession of a mortar dressed on the outside, he will acknowledge that he did not make it, but found it—in other words, it is prehistoric. The prehistorics used handsomely dressed pestles sometimes embellished with rings, but the squaw nowadays simply picks up a long slender cobble from the brook." Mr. Powers' figure of the ringed pestle (if pestle it was originally) is to be seen enlarged in *de Quartrefages'* "Races Humaine," p. 103, and may be compared with Plate XIV., a representation of the Papuan implement. Had this latter been nothing more than a pestle, it would have been reasonable, almost necessary, to suppose that, wherever it was made, stone mortars similar to those utilized by the irreverent Yokuts, were also in use. Such mortars are believed to be unknown in the New Guinea of the present day where the grinding apparatus, apart from the small betel-nut mortars, consists, like of those of Yokut make, of a rough block of stone superficially hollowed and of a rounded pebble for an upper mill stone; the whole but little superior to the grinding slabs of Australia. But notwithstanding that the longitudinal groove may have been added subsequently to the formation of a pestle to adapt it to other purposes, a groove, the result of sharpening weapons on it, would not pass through the flange. It is perhaps safer to regard the implement as originally a tool or weapon which has incidentally been put to use in some ordinary grinding cavity. Even so, the difficulty of accounting for its occurrence and mystical value in New Guinea is by no means removed, scarcely lessened. It seems not only different from, but in its way superior to anything made there now. The reversible mount of the ordinary Papuan axe is indeed a well devised improvement on the fashion of fixing a blade in one position in a straight haft, and were it certainly an indigenous device, would be creditable to Papuan ingenuity; but the clubstones and picks, whether perforated to receive the haft or designed to fit into a perforation in the haft, are unprovided with any means by which they can be immoveably fixed in place, and are so far inferior in design. As for the heads of the straight-shafted Tugeri clubs, they are the merest crudities beside this sorcery charm. A stone or other object made by human hands to some useful end is not likely to pass into the domain of magic or worship as long as it remains in familiar use, unless in reverence of that use, or being unused, as long as the knowledge of its origin is recent, unless it has been derived from some awe-inspiring

source. The Papuans do not worship utensils on account of their use to them in their labours. The stone in question is an object of awe to the people of Mekeo. As an implement, it is therefore unfamiliar to them, and any actual knowledge they have of its local manufacture or of its derivation must be more or less traditional. The probability of its having been recently brought amongst them is small. Without assuming that the stone implements of every tribe in British New Guinea are known, it may at least be said to be hardly probable that there will yet be discovered one of a type so distinct from those generally in use as the one before us. It is, of course, possible that it may have been introduced into the south-east of the island from a foreign source, and has been made a fetish or sorcery medium in forgetfulness or even in remembrance of that source. The writer's knowledge of the stone weapons of Dutch and German New Guinea is not sufficient to assure him that it could not have come from one or the other, but so far as literary resources are open to him, he has failed to meet with a record of a similar one from New Guinea, Oceania, or elsewhere. Ringed stones and longitudinally grooved stones are to be found, but a combination of the two has been sought for without success. In Evan's "Ancient Stone Implements," we read of numerous ways of mounting stones for use, but find no mention of an implement grooved for the reception of a wedge on the one hand, and flanged for abutment against the haft on the other. Certainly such provisions for mounting may have been noticed elsewhere since 1892, but till advised of this one cannot but suspect that however it is to be accounted for, the Mekeo stone points to a past state of Papuan art, and one more advanced along its particular path of development than is to be found at the present time in New Guinea.

To revert to the occasion of the foregoing note. In the course of an expedition from the east coast into the interior, Captain Barton made acquaintance with mountain tribes on the head waters of the Musa, a river flowing into Dyke Acland Bay. One of the tribes is called by the coast people, who suffer from its raids, Domari, i.e., mountaineers. Observing a potsherd suspended from the neck of a man in each of two distinct tribes, he made inquiry, and found that they were worn as charms, and noticing moreover a peculiarity about the potsherds themselves, he, on ethnology intent, effected a friendly transfer of them to his own possession, and subsequently with great kindness presented them to the Museum. The circumstance which chiefly attracted Captain Barton's attention to the shards was that they were suspended by handles. They are similar parts of the edge of two pots (Plate XII.). These, when entire, had thick flat lips slightly overhanging the inner surfaces, about 12 mm. broad, and expanded at opposite points, presumably into triangular projections, which at their apices, were continued outwards and downwards till they united with the body of the pot a little below the neck, the whole forming strong and well-shaped handles. In the

larger, better-made, and better-preserved of the two, the surface of the flat lip was ornamented throughout with scalloped bars, separated by intermediate furrows set obliquely in opposite directions on each side of the expansion, and on it developed into a rhomboidal pattern of similar bars concentrically arranged; the edges of the expansion are embellished with oblique notches, and the side of the neck below it with impressed undulatory lines. Though the inner surface shews horizontal grooves, such as might have resulted from the revolution of the clay under the finger of the potter, it leaves the use of the wheel questionable. In the lesser shard, the material is a sandy yellowish clay. It was imperfectly baked in an open fire, which acted less on the inner than on the outer surface. In a series of over one hundred pots collected at various points on both coasts of British New Guinea, there is not one whose edge is strengthened by a thick flat lip, nor is there one whose neck is relieved of tension when the vessel is in use by an arch connecting the edge with the body, and so forming a handle. There is but one—apart from the imitation of a cocoa nut or gourd dipper figured beside it in Edge Partington and Heapes Album, ser. 3, p. 76, ff. 8, 9—which has a handle of any kind, and this rising loop-like upwards from the brim has an appearance of fragility and, beyond its immediate office of suspension, of uselessness in strong contrast with the idea of purposeful massiveness conveyed by the shard. This charm also may very possibly be to the Papuan a proof that something to which he is unaccustomed has been wrought in the past, and consequently has acquired a potent influence over the present. So it has been with the flint arrowheads and stone celts of Europe. But again we have to remember eventualities. To conclude from the apparent absence of a higher type of pottery from British New Guinea that it is also foreign to the rest of the Island would be unwise. All that can be said with confidence is that provided that the south-eastern pots are not inferior to any made elsewhere in the Island, these shards tell us of a stage of industrial culture distinctly higher than at present obtains. Time may indeed shew that they are not indigenous products, but due to contact with some exotic culture.

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## BATS.

During an examination of the bats which have been added to the Museum during the last few years, three have been met with which do not seem to have been described. They are a *Cephalotes* and two species of *Taphozous*. Whether the seeming and the truth are of one accord, time and the following descriptions will tell :—

*CEPHALOTES pannietensis* n.s.

A species with a gular sac as in certain microchiroptera and a cervical integumentary band, as in *Epomophorus monstrosus*. though not perhaps separable on account of these peculiarities from the genus *Cephalotes*, may be held to be different from *C. peronii*.

ADULT MALE.—Form of head as in *C. peronii*. Ear twice as long as broad measured across the curve of the conch, as long as the face in front of the middle of the eye, anterior margin gently convex, concave near tip, posterior edge much more convex, concave near tip, tip obtusely pointed; inner surface of conch with numerous ridges, those at the base strongly marked; eye central between root of ear and tip of nose; nares contiguous behind, divergent in front, subtubular, opening sublaterally, convolute around the narial orifice; upper lip with a central, oblong cushion divided by a deep central groove; lower lip with a small crescentic cushion on each side of the centre; a group of glands behind the rhinarium on each side, and a conspicuous supraorbital gland; a small but distinct gular sac secreting a waxy substance; a strong vermiform integumentary fold from over the clavicle to the back of the neck, and a smaller one between it and the shoulder; index clawless, ending in a small knob; wing from a septum attached to the central line of the back, thence to the bases of the toes; tail short, free for about three-fourths of its length; interfemoral margin deeply emarginate between the end of the calcaneum and the tail; from the angle of both lips a superficial loop-like fold of integument enclosing a glandular (?) space.

Fur short and harsh; head above, except rhinarium, hairy; ear with a few long hairs on the base of the posterior edge without,

and on the anterior base of the conch within; on the back the fur extends to the margin of the wing membranes, and continues on the body beneath them; there are scattered hairs on the post radial and rest of the wing membranes, and on the raised cervical folds. Beneath there is scanty hair on the antibrachial membrane, and on the postradial in a band which becomes much denser at the elbow. The fur of the shoulder extends upon three-fourths of the humerus, that of the pubis on the femur to the like degree, interfemoral membrane naked except near junction with tail.

COLOUR.—Above, reddish brown, the hairs uniform, more or less glistening; beneath, brown, silvered with shining hairs.

Teeth as in *C. peronii*, molars narrower than premolars. Palatal bars, 12, anterior four simple, more or less arched, last with foliated margin, the rest in pairs, rib-like.

|               |    |    |    |    |    |    |          |
|---------------|----|----|----|----|----|----|----------|
| Head and body | .. | .. | .. | .. | .. | .. | mm.125.0 |
| Tail          | .. | .. | .. | .. | .. | .. | 26.0     |
| Forearm       | .. | .. | .. | .. | .. | .. | 115.5    |
| First digit   | .. | .. | .. | .. | .. | .. | 33.0     |
| Second digit  | .. | .. | .. | .. | .. | .. | 64.5     |
| Third digit   | .. | .. | .. | .. | .. | .. | 201.0    |
| Fourth digit  | .. | .. | .. | .. | .. | .. | 151.0    |
| Fifth digit   | .. | .. | .. | .. | .. | .. | 131.0    |
| Ear, height   | .. | .. | .. | .. | .. | .. | 23.5     |
| Ear, breadth  | .. | .. | .. | .. | .. | .. | 12.0     |
| Tibia         | .. | .. | .. | .. | .. | .. | 52.5     |
| Foot          | .. | .. | .. | .. | .. | .. | 25.5     |
| Calcaneum     | .. | .. | .. | .. | .. | .. | 12.0     |
| Hair of back  | .. | .. | .. | .. | .. | .. | 12.0     |

In the adult female the eye is nearer to the end of the nose than to the root of the ear, the cushion on the upper lip is irregular in shape and deeply emarginate on its lower margin. There is no gular sac, but a small cervical band, which may be altogether absent, and the centre of the lower breast and abdomen is reddish. Locality, Panniet Island, Louisiades.

One male, three females in alcohol. Skull of one of the females.

#### TAPHOZOUS fumosus n.s.

This is a Taphozous, with a wing-pouch, a throat-sac, which, in the female, is rudimentary, and ears which have papillæ on their inner edges. So far it resembles the two African species, *mauritanus* and *nudiventris*; but, unlike the latter, its lower back is not bare of fur and its wing extends to the ankle, while from the former it differs in the colouring of its membranes and lower surface; in the disposition of the fur beneath the wing, in a proportionately longer fore-arm and shorter tail, etc. Among Australian species it has virtually but one ally from which it need be distinguished, *australis*, since *flaviventris* is from this last differentiated, chiefly by size and colour, and *hargravei* is stated by its describer to be related



to *affinis*, and should therefore have no radiometacarpal pouch.\* It is distinguished from *australis* by the presence of a rudimentary gular sac in the female, a lobule on the tragus, a much shorter forearm and tail and by its colour.

Ear nearly as broad as long, as long in the face from the dorsal root of the ear to the end of the nose. Its dorsal margin thickened at the root, then palpillate, slightly concave in the middle; tip rounded; outer (caudal) edge straight, tragus broades and but little rounded on the summit, with rounded angles, concave on its inner edge, its outer edge straight, but interrupted in the middle by a shallow lobule. Lower lip with a triangular cushion on each side of its centre, rather remote. Gular sac in the male developed, in females represented by a marginal fold of integument and a naked area enclosed. Wing from the proximal end of the tarsus; a radiometacarpal pouch.

FUR.—Muzzle, as far as frontal sulcus, with stout scanty hairs; on the ear the fur of the head extends on the dorsal side of the base; a few long fine hairs on the base within and a very delicate fringe of short hair on the summit of tragus, the rest of the ear naked; antibrachial membrane naked on both surfaces; dorsal fur extending on the wing between the middle of the humerus and that of the femur, thence a short distance outwards on the interfemoral membrane, thence in a curved line to the exit of the tail; tibia and feet naked, or with a few fine hairs between and beneath the toes. On the inferior surface the fur of the chin extending to the middle of the area in front of the gular sac; on the wing the usual postradial band, the ventral fur extending from the middle of the humerus obliquely to the anus, its humeral limit prolonged in a narrow band passing along the bone to its distal end.

COLOUR.—Above dark brown, slightly tinged with yellow, the hairs more distinctly ochreous at the base; beneath, the same but paler, the hairs slightly yellower at the base; ears, membranes, and integument uniform black.

TEETH.—m3 not merely the transverse lamina ascribed to the genus by Dobson. It has a sharp median cusp and a posterior extension, which assimilate it to the fore lobe of m2. Palatal

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\*By the great courtesy of the Curator of the Australian Museum, I have been able to examine Dr. Ramsay's type of *T. hardgravei*, and to affirm the absence of the pouch. When Dr. Dobson wrote that the supposed want of a gular sac was the only important difference between *T. hardgravei* and *flaviventris*, he must have overlooked the fact that Dr. Ramsay considered his species allied to *affinis*, and consequently one that did not possess the distinguishing character of the group to which *flaviventris* belongs. *T. hardgravei* is a sound species and a fine one.

bars five, the foremost and hindmost single arches; the others double.

|                               |    |    |    |    |    |    |          |
|-------------------------------|----|----|----|----|----|----|----------|
| Head and body                 | .. | .. | .. | .. | .. | .. | mm. 75.5 |
| Tail                          | .. | .. | .. | .. | .. | .. | 25.5     |
| Forearm                       | .. | .. | .. | .. | .. | .. | 63.5     |
| First digit                   | .. | .. | .. | .. | .. | .. | 5.5      |
| Second digit                  | .. | .. | .. | .. | .. | .. | 60.5     |
| Third digit                   | .. | .. | .. | .. | .. | .. | 92.0     |
| Fourth digit                  | .. | .. | .. | .. | .. | .. | 62.0     |
| Fifth digit                   | .. | .. | .. | .. | .. | .. | 56.0     |
| First phalanx of third digit  | .. | .. | .. | .. | .. | .. | 17.5     |
| Second phalanx of third digit | .. | .. | .. | .. | .. | .. | 20.5     |
| Ear, vertical length          | .. | .. | .. | .. | .. | .. | 14.0     |
| Ear, inner edge               | .. | .. | .. | .. | .. | .. | 9.0      |
| Ear, breadth                  | .. | .. | .. | .. | .. | .. | 13.5     |
| Ear, length of tragus         | .. | .. | .. | .. | .. | .. | 6.0      |
| Tibia                         | .. | .. | .. | .. | .. | .. | 26.0     |
| Foot                          | .. | .. | .. | .. | .. | .. | 11.5     |
| Calcaneum                     | .. | .. | .. | .. | .. | .. | 13.0     |
| Hairs of back                 | .. | .. | .. | .. | .. | .. | 5.5      |

Locality, Gowrie Creek, Cardwell. Coll. Broadbent. One male and three females in alcohol. One male skin of ♀ type (examined, in al. and dry). Skull of preceding.

#### TAPHOZOUS nudicluniatus.

A species connecting *T. nudiventris* with *saccolaimus* and *affinis*, having the nudity of the lower back of the first, together with the occasional development of a minute wing-pouch, and the grooved lip and smooth ear of the others, together with no wing-pouch. Its hairy abdomen and nonpapillate ear sever it from *nudiventris*. Like *saccolaimus*, it has the fur more or less speckled, but on the other hand differently distributed, and, in the female, the throat sac is rudimentary, as in *affinis*. From the last it differs greatly in the disposition of the fur, colouring, and size.

ADULT FEMALE.—Ear nearly as broad (from inner root to outer margin)<sup>1</sup> as long, as long as the face from the inner root of the ear to the end of the nose; inner margin thin, not papillate, regularly convex, tip rather narrow, outer margin slightly convex, tragus concave in front, convex on upper moiety, the edge of the convexity curving downwards and forwards near the base upon the outer surface. Lower lip with a central cushion, emarginate above, deeply grooved below. Gular sac represented by a fold of integument and nearly bare skin within its compass; wing from the proximal end of the tarsus; radiometacarpal pouch very small or absent.

FUR.—Above, on the muzzle scanty and 'short, nearly obsolete on the canthus rostralis, denser on the frontal line, longer and forming tufts on the cheek behind the eyes; fur of the head ascending

on the dorsal base of the ear, a group of long hairs on the base of the conch within, the hinder surface and upper edge of the tragus hairy; fur on the occiput as on the vertex, or elongate and silky; on the wing extending from the proximal third of the humerus to the same point on the femur, then rounding off to the spine at a distance of about 9 mm. from the exit of the tail; interfemoral membrane, tail and tibia naked; toes hairy. Beneath chin nearly naked, sac with fine hairs throughout, antebrachial membrane hairy, hairs of postradial band sparse, except in the angle made by the forearm and fifth digit, where they are close and long; on the hinder wing membrane the fur extends from the middle of the humerus to the knee, and the humeral origin is carried outwards to the elbow; interfemoral membrane tibia and toes naked.

COLOUR.—Above, on face behind the eyes and on the forehead, bright reddish brown; head dark brown; occiput the same, but, when the fur is long and pale, yellow brown contrasting with the head; back, rich red brown, the hairs white at the extreme base, some wholly white, producing scattered white spots, which may be almost wanting. Beneath, pale greyish brown, the pale brown hairs whitish at the base, being tipped with grey, on wing membrane brownish white posteriorly, nearly white anteriorly; membrane between digits uniform, or on the postradial membrane a partly brown partly grey streak, ending in a triangular whitish mark at the tip of the fifth digit. Skin, white.

TEETH.—m3 like that of *T. fumosus*. Palatal bars, six, or including a pair of minute bars immediately behind the rudimentary incisors, seven. The last four double arched, the others nearly straight.

|                               |    |    |    |    |    |    |         |
|-------------------------------|----|----|----|----|----|----|---------|
| Head and body                 | .. | .. | .. | .. | .. | .. | mm 93.5 |
| Tail                          | .. | .. | .. | .. | .. | .. | 26.5    |
| Forearm                       | .. | .. | .. | .. | .. | .. | 75.0    |
| First digit                   | .. | .. | .. | .. | .. | .. | 12.0    |
| Second digit                  | .. | .. | .. | .. | .. | .. | 73.5    |
| Third digit                   | .. | .. | .. | .. | .. | .. | 131.5   |
| Fourth digit                  | .. | .. | .. | .. | .. | .. | 81.0    |
| Fifth digit                   | .. | .. | .. | .. | .. | .. | 62.0    |
| First phalanx of third digit  | .. | .. | .. | .. | .. | .. | 29.0    |
| Second phalanx of third digit | .. | .. | .. | .. | .. | .. | 31.0    |
| Ear, vertical height          | .. | .. | .. | .. | .. | .. | 16.0    |
| Ear, inner margin length      | .. | .. | .. | .. | .. | .. | 12.5    |
| Ear, breadth                  | .. | .. | .. | .. | .. | .. | 16.0    |
| Ear, tragus                   | .. | .. | .. | .. | .. | .. | 5.0     |
| Tibia                         | .. | .. | .. | .. | .. | .. | 31.0    |
| Foot                          | .. | .. | .. | .. | .. | .. | 15.0    |
| Calcaneum                     | .. | .. | .. | .. | .. | .. | 16.0    |
| Hair, middle of back          | .. | .. | .. | .. | .. | .. | 5.0     |

Locality, Gowrie Creek, Cardwell. Coll. Broadbent. Two adult females in alcohol.



## ORNITHOLOGICAL.

CONCERNING *GERGYGONE flavida* RAMSAY.—In the British Museum Catalogue of Birds, vol. 4, p. 330, Dr. Sharpe enters among the synonyms of *Gerygone personata* Gld, the *G. flavida* of Dr. Ramsay,\* and it is believed that the propriety of the identification has not hitherto been questioned. There are, however, good grounds for doubting it. Dr. Sharpe regards the bird described as *flavida* as a female, for to his entry of it he adds the feminine symbol in brackets. Doubtless he felt at liberty to do so, since Dr. Ramsay had omitted to state the sex of his type. That omission was, as it proved, unfortunate, but by no means remarkable, since, in the absence of a counterstatement, it is generally inferred that a bird described is or is believed to be a male. But in the present case we are not by the description itself left without evidence that the type is really a male bird, for it gives as one of the characters “a stripe on either side of the throat, from the base of the lower mandible to below the ear coverts, white”—“the moustachial streak” of Dr. Sharpe. This feature occurs also in the male of *G. personata*, but curiously enough no mention of it is made by Dr. Sharpe in his description of the female of that species, by means of which he identifies with it *G. flavida*. This shews that in *G. personata* at least the moustachial streak is a masculine character, and the fact would at least have justified the use of a “?” after the feminine symbol aforesaid. To endeavour to settle the question, permission to examine Dr. Ramsay’s type was solicited from the Authorities of the Australian Museum, and with great kindness granted by them. The label in the describer’s handwriting indicated a male in the usual way. There is no room left for any doubt about the correctness of the indication when we compare the type with other co-specific examples from the same locality. It becomes perfectly clear that the white moustache is a masculine ornament in this species also, and that it is not assumed until the bird is fully adult. Of such birds there is but one in a series of seven, its sex attested by the mode of crossing the legs, adopted by the collector, Mr. K. Broadbent, and from this example Dr. Ramsay might have drawn up his description in exactly the same terms as he used. If it were necessary to adduce any further reason for rescuing *G. flavida* from the limbo of synonymism, due weight might be given to the affirmation of the collector that the haunts of *G. flavida* are quite different from those of *G. personata*. The latter inhabits low dense scrubs at Cape York, the former he obtained only from the tops of lofty forest trees in the Herberton district. Before dismissing the type specimen, it may be useful to those who have to identify with it examples of the other sex or different ages to mention two characters not included in Dr. Ramsay’s description, but present in the species, an orbital ring

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\* Pro. Lin. Soc., New South Wales, v. 2, p. 537.

and a very pale, almost white, chin and upper throat. The whiteness of the throat is most decided in adult males, these have many feathers of the chin entirely white or nearly so. A few white feathers occur in most young males and females, but to judge from material at hand it is but seldom, even among females, that the throat can be said to be yellow. The ring round the eye, dusky and easily overlooked in the type, is invariably present, and in females appears to be whiter and better developed. The colour of the bill appears to vary with age from horn brown, more or less pale, to black. The female differs from the adult male in the absence of the moustache, little or no whiteness of the upper throat, and the paleness of the orbital ring.

AN APPARENTLY NEW SERICORNIS.—It can hardly be thought rash to anticipate that many additions to our list of known birds will be gradually made as the vast extent of territory in the west and north-west of the State, explored at present only by the squatter and prospector, is searched by the zoological collector. Of the indigenous products of these regions we know very little so far. Indeed, it would appear that it is not necessary to go nearly so far afield to make new acquaintances of the kind. Charleville, the terminus of our Southern Railway, seems on the map to be almost at our door, yet there are birds in its vicinity not found nearer to the coast, a tree creeper, for example, and the two now to be introduced as candidates for admission to our avifauna. Both belong to the peculiar group of small insectivorous tree birds, to which the trivial names of thornbills (*Acanthiza*) and scrubwrens (*Sericornis*) are given. The majority of the species of both genera and all those of *Acanthiza* have the tail ornamented with a dark cross band, which is most obvious when the bird raises the organ, and brings its lower surface into view, an act conducive to their recognition in their leafy haunts. The scrub wren under view appears to be easily distinguishable by its diminutive size and rufous undertail from those of its fellow species, which, like it, have the dark band on the tail.

#### DESCRIPTION OF SERICORNIS tyrannula n.s.

General colour of upper surface rufous brown, graduating from brown anteriorly to bright rufous posteriorly. Head and nape brown, uniform on the forehead. Wing rufescent brown, median coverts edged with rufous; greater coverts blackish brown, forming a dark rectangular blotch on the wing; primaries broadly edged with pale rufous, in certain lights with rufescent gray; mantle and scapulars rufescent brown, the rufous tint predominant on the lower back. Upper tail coverts, bright rufous; middle tail feathers rufous brown, the others dusky gray, permeated by the dark band of the under surface. Lores and cheeks subrufescent, the latter mottled with dark gray; ear coverts rufescent with pale



shaft streaks. Palpebral streak dark in front, rufous in centre, pale posteriorly. Chin, throat, upper breast and flanks, pale rufous, passing into dusky white on the lower breast and abdomen; vent dusky brown; under tail coverts bright rufous; tail with a black transverse band, occupying the third quarter from the base; thighs and under wing coverts pale rufous; bill, legs, and feet, dead straw colour. Total length, 85 mm., culmen imperfect, wing, 50; tail, 42; tarsus, 21. Tail rounded, four stiff bristles at the gape. Locality, Charleville. Collector, K. Broadbent.

There is but one example of this bird, and that of unknown sex. It is not at all unlikely that when it is better known, it will be referred to another genus.

#### DESCRIPTION OF *ACANTHIZA modesta* n.s.

Above, pale olive brown, mantle feathers with concealed paler shafts; rump pale yellowish brown, with a few white-tipped feathers; wing brown, coverts edged with ash grey, grey primaries with the same, but much more narrowly, bastard wing with dingy white; tail feathers ashy brown, with a broad blackish subterminal cross band and a broad whitish tip; forehead and lore uniform with head; eyelid dingy white and obscure; cheeks pale brown; ear coverts darker brown, both with pale shaft streaks; side of neck, shoulder, and all beneath pale buffy yellow, purer on the abdomen and under tail coverts, slightly tinged with rufous on the throat; thighs pale brown, its feathers edged with pale yellow; under wing coverts yellowish white; inner webs of quills with paler margins; bill and feet dark brown. Length, 85 mm; culmen, 7; tail, 40; wing, 48; tarsus, 19.

Female like the male, but with all the feathers of the rump broadly edged with pale yellow, and the head faintly lineated with paler shaft streaks. Habitat, Charleville.

The sexes are given on the authority of the collector, Mr. K. Broadbent, but it seems not improbable that they should be reversed. On the whole, perhaps, this bird resembles *A. lineata* more than any other, but altogether wants the distinctly striated throat, and all but a trace of the lineated head of that species.

#### DESCRIPTION OF *ANCATHIZA katherina*, A MOUNTAIN THORNBILL.

Above olive green, duller anteriorly, slightly rufescent posteriorly; wing brown, coverts and secondaries broadly edged with olive green, primaries narrowly with greenish gray, which towards the base and on the innermost primaries is rather rufescent; upper tail coverts rufous brown, lateral uropygial tufts almost or quite obsolete; middle tail feathers pale, rather rufescent-brown on the outer webs, laterals with a broad subterminal black cross band and a large dusky white tip, which, on the anterior half of its inner web, becomes white, thus forming a cuneiform white spot beyond the black cross bar; frontal feathers olive brown at base, with pale

tips, causing an inconspicuous scaly appearance; lores as the frontals; eyelid dusky white; cheeks and ear coverts mottled olive green and white, the latter predominant on the cheeks; chin and throat nearly white, narrowly striated with a few black streaks on the feathers; upper breast yellowish white, passing into dull greenish yellow on the lower breast, abdomen, and flanks; under tail coverts white, very slightly washed with yellow; thighs very pale brown; axillaries, under wing coverts and bastard wing as under tail coverts; under surface of quills with whitish edges on the inner web; iris yellow; bill black-brown; legs light brown. Length, 96 mm.; culmen, 7; wing, 52; tail, 48; tarsus, 14.5.

The female does not differ from the male in any notable respect. Habitat, Bellenden Ker Range, at a height of 4000 feet.

This species has the delicately streaked throat and non rufous forehead of *A. apicalis*, the dull rufous upper tail coverts of *pusilla*, and the pale yellow under surface of *diemensis*; wants the bold throat markings of *pusilla*, the brightly coloured upper tail coverts of *apicalis*, and the size and brown flanks of *diemensis*, and the white spot on the tail feathers is not possessed by any other species.

#### GERYGONE fusca.

In the Herberton district this species is represented by a race devoid of the white lore, and having the side of the neck light reddish brown instead of gray, but as these seem to be the only constant differences, it is advisable to wait for information about the habits, nidification, etc., of the birds before granting them higher rank.

#### AN UNDESCRIBED PACHYCEPHALA.

A rather dishevelled specimen of a female thickhead was among the zoological spoil obtained in June, 1889, by the scientific expedition to the Bellenden Ker Range at that time in progress. Though the skin appeared then as now to have been derived from an unknown bird, it was thought well to defer a description of it until further light was thrown upon the species by the appearance of the male. Unfortunately, it has been found impossible to take any step towards making the discovery, the Museum being deprived of later years of the means of sending a collector to the spot. As there still seems to be no immediate prospect of obtaining the significant sex, the writer is induced to give the following account of the female under the name of *Pachycephala mestoni*.

Upper surface dull olive green; base of the feathers blue-black on the forehead, passing insensibly into slate-blue on the hind head and all beyond, the dull yellowish olive-green of the broad margins of the feathers becoming more distinctly yellow on the upper tail coverts; tail brown, all its quills, except the outermost

on each side, fringed with olive green ; wing dark brown, but shewing that colour in the centres only of the coverts and secondaries, which are also paler and tinged with rufous ; primaries narrowly edged with grey ; cheeks brown with many black hairs and at the gape rufous brown ; ear coverts brown, with paler shaft streaks ; chin and throat uniform dusky, passing into the pale rufous brown which forms an undefined zone across the upper breast ; lower breast and abdomen pale cinnamon, changing into pale dull yellow on the under tail coverts and lowermost flank feathers ; tail beneath slate-brown, with white shafts ; thigh brown ; under wing coverts brownish white, faintly edged with yellowish, quills beneath edged with silky white, which on the innermost primaries is tinged with fulvous ; bill and feet, black. Length, 153 mm. ; culmen, 14 ; wing, 88 ; tail, 78 ; tarsus, 23.

The bird was shot by Mr. A. Meston on one of the spurs of Mount Sophia, and carried for some time in his pocket, a circumstance which may be pleaded in extenuation of possible errors of description.

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## A NEW GENUS OF LIZARDS.

In the course of re-arranging a reptile collection, which has for some years been slowly increasing, and had been thrown into sad confusion by the exigencies of a hurried removal to new quarters, an unlabelled bottle was met with containing snakes that have almost certainly been brought from one of the Solomon Islands by an unknown contributor. Among them was a small lizard, which deserves precedence over any ophidian pretenders to present notice. On removing it from the alcohol it seemed to be a specimen so badly cured that the skin of the abdomen had loosened, and slipped away over the legs. Further inspection shewed that this was not the case; though the head scales were not altogether perfect, the hinder parts of the body were well preserved. On lifting the apparently displaced skin, it was found to be a delicate fold rising from the abdomen and deep enough to cover the bases of the thighs, and, moreover, that these also were each invested with a separate skinfold. Knowing no other lizard with an apron and a pair of drawers, I venture to think that one so provided may be granted generic rank, and as the apron conceals parts which, to the best of my memory, are exposed in all other lacertians, the best name which suggests itself for the genus seems to be *Calyptoprymnus*.

## CALYPTOPRYMNUS n.g. FAM. AGAMIDÆ.

Habit depressed; head shields mostly normal; nostril in a single nasal; tympanum exposed, superficial; eyelids well developed, scaly; teeth small, conical, numerous; feet pentadactyle; scales in straight longitudinal and transverse series, the dorsals quadrate and keeled, the abdominal oblong and smooth, the caudal forming spinose rings. An abdominal fold covering the anus and part of thigh, beneath it loop-like folds from the tail surrounding the thighs.

## CALYPTOPRYMNUS verecundus n.s.

Plate XV.—Head conical; nostril round, on lower edge of nasal; three loreals, the largest in touch with the nasal and fronto-nasal, the last very narrow and below the front of the orbit; supra-oculars four, the anterior two in touch with the frontal; frontal as long as its distance from the rostral, about twice as long as broad; frontoparietals in two parts, the anterior the smaller, triangular, with anterior angles truncate, the posterior oblong, with upper posterior angles truncate; parietals in contact behind the interparietal; first row of small nuchals oblong, smooth, continued over the temporals to the eyes; ear orifice triangular, longer than the eye cleft; dorsal scales not or scarcely imbricate, with keels which are pointed in front, broad behind, and running in continuous longitudinal lines; tail shorter than head and body, armed with whorls of spinose scales; scales of abdomen, abdominal fold and anal region beneath it oblong and smooth; limbs rather

short and feeble, but overlapping when brought together; digits covered with transverse plates above and below; claws short; preanals enlarged; no preanal pores; insertion of abdominal fold from a transverse line on the abdomen, extending dorsad and caudad to the dorsal edge of the root of the tail; the caudo-femoral fold forming a broad loop-like band arising from an inferior and a superior origin on the side of the root of the tail, and loosely investing the proximal part of the thigh; there is also an inner fold rising from a separate origin on the tail covering the outer side of the thigh and ending free within the outer fold. Scale rows, 21; length of head and body, 38 mm; tail, 31; head, 8; hind foot, 12. Above reddish brown, beneath dull yellowish brown. One example in al. Habitat uncertain, but believed to have been brought from one of the Solomon Islands by some person on board a "labour" vessel, who sent it without information or making himself known.

#### ON TYPHLOPS *terresianus* BLGR.

The fact that this blindworm is in the British Museum Catalogue of Snakes placed next to *T. ligatus* Pet. seems to show that in the opinion of the learned author the two are closely allied. From data now accessible it is not impossible that a knowledge of more than the two Murray Island specimens named by him *torresianus* might have caused him to hesitate before separating them from *T. ligatus*. Queensland examples of *T. torresianus* were identified by Mr. Waite in 1895, and since that date several others have been received from the north of the State. The result of an examination of the whole series leads one to doubt whether they are really distinct from *T. ligatus*.

The synoptical characters of the two species are:—

- |   |                       |
|---|-----------------------|
| 24 scale rows round the body; nasal cleft |                       |
| proceeding from the first labial          | .. <i>ligatus</i>     |
| 22 scale rows round the body; nasal cleft |                       |
| proceeding from the second labial         | .. <i>torresianus</i> |

To these we may add:—

- |  |                          |
|--|--------------------------|
| Tail one and half times as long as broad | .. <i>ligatus</i>        |
| Tail rather longer than broad            | .. .. <i>torresianus</i> |

Having nine specimens to deal with, I find that of these—

- 5 have 24 scale rows and the nasal groove from the first labial; these correspond so far with *ligatus*, but they have the tail of *torresianus*
- 2 have 22 scale rows and the groove to the second labial; these correspond so far with *torresianus*, but they have in one case the tail of *torresianus*, in the other of *ligatus*.
- 2 have 22 scale rows and the groove to the first labial, and both have the tail of *torresianus*. These fail to correspond with either species.



The alternative before us seems to be either to throw *ligatus* and *torresianus* together as one species, viz., *ligatus*, or to make the intermediate form a new species.

#### DISTIRA nasalis n.s.

Rostral as long as broad; nasal about five times as long as the inner prefrontal suture, shorter than frontal, its inferoposterior angle divided off by a groove from the nostril to the prefrontal and another to the second labial; frontal much longer than broad, longer than its distance from the rostral, shorter than the parietals; one pre- and two postoculars; anterior temporal large, descending to the mouth; six upper labials, third and fourth entering the orbit; two pairs of chin shields, the anterior much the longer, in touch with three lower labials. Scale rows, 33 on neck; 37 on body; ventrals distinct, smooth. Whitish, with broad black bands across the dorsum and tail, and intermediate bands of spots more or less confluent; sides and belly with dark spots; tail beneath with bars alternating with its dorsal bands. One example in al., Queensland coast.

#### PLATURUS frontalis n.s.

A species with keeled ventrals and an azygous head-shield, but distinguished from *P. schistorynchus* by an entire rostral and shield-like temporals; from *P. muelleri* by the azygous shield aforesaid, an elongate frontal and different lepidosis.

Rostral, deeper than broad, entire, separating the nasals; an azygous shield between the prefrontals; frontal longer than parietals, its posterior angle acute; seven upper labials, the third and fourth entering the orbit; one pre- and two postoculars; one anterior and two posterior temporals; scale rows 21 round the body; ventrals, 198, the last 30 keeled, except the divided penultimate and preanal; subcaudals 31. Head pale yellow, with black markings as in the other species; dorsum with 34 black cross bands narrower than the spaces between them; under surface nearly white. One example in al. Hab. New Guinea.

#### VANAPINA n.g.

Maxillary extending as far forwards as the palatine; on it anteriorly a deeply-grooved fang, the groove folded over at the base, after a short diastema four or five small ungrooved teeth; anterior mandibular teeth enlarged, fang like; posterior minute, all ungrooved. Habit elongate cylindrical, tail short and thick; eye very small; pupil round; nasal divided; no loreal; scales smooth in 17 rows; ventrals rounded; subcaudals paired.

## VANAPINA lineata.

Snout rounded, moderately long; eye about half as long as its distance from the mouth; rostral as deep as broad, visible from above; nasal divided by a groove to the second labial and by the nostril above; internasals shorter than the prefrontals; prefrontals entering the orbit; frontal a fifth longer than broad, rather longer than its distance from the rostral; shorter than the parietals, twice as broad as the supraoculars; preocular fused with the prefrontal, one postocular; temporals  $1 + 2$ ; 6 upper labials, third and fourth entering the orbit; two pairs of chin shields, anterior in touch with lower labials, posterior more scale-like and separated by a scale; scale rows, 17; ventrals, 288; anal divided; subcaudals, 26. Above brown, a faintly darker longitudinal bar on each scale, forming obscure lines on dorsum, on the laterals the bars distinct and forming continuous lines on a white ground; ventrals yellowish white with two black intramarginal lines; head with a white cross bar over the prefrontals, a round white spot on the rostral, and a large white blotch on the last two upper labials. One example in al. Habitat, Vanapa Valley, British New Guinea. Is this *Apistocalamus lorice*, Blgr?

## RHYNCHELAPS latizonatus n.s.

Snout deep, projecting at the tip; eye less than two-thirds its distance from the mouth; rostral broader than deep, with its edge and posterior angle obtuse, its upper surface equal to distance from the frontal; internasals about two-thirds as long as the prefrontals; frontal as long as its distance from the tip of the snout, nearly one and one-fifth times as long as broad, broader than the supraoculars, one-third shorter than the parietals; nasal elongate, in touch with the single preocular; two (?) postoculars; temporals,  $1 + 1$ , the anterior very large; six upper labials, the last very large, third and fourth entering orbit; anterior chin shield rather the larger, in touch with three lower labials; posterior separated by a scale; scale rows, 15; ventrals, 225; anal divided; subcaudals, 19 pairs. Pale yellow, with 33 broad complete blue-black rings. One example in al. Habitat, Queensland.

The tumid snout and greater number of ventrals distinguish this snake from *R. bertholdi*. On both sides the postocular area has lost its scales, it is even possible that there are no postoculars.

## PSEUDECHIS gutta'a n.s.

Distinguished from *P. papuanus* by its reduced number of ventrals and paired subcaudals, by differences in the proportions of some of its head shields and in colouring.

Eye moderate, longer than its distance from the mouth; rostral broader than deep, upper surface equal in length to the suture between the internasals, less than a third of its distance from the frontal; internasals half the length of the prefrontals;

frontal half as long again as broad, considerably longer than the prefrontals, as long as its distance from the rostral, as broad as the supraocular, three-fifths as long as the parietals; posterior nasal in touch with the single preocular; postoculars two; temporals 2+2, lower anterior large, wedged between fifth and sixth upper labials, third deeper than fourth; six upper labials, third and fourth entering orbit; chin shields equal, anterior in touch with four lower labials; scale rows round the body, 19; ventrals, 181, rounded. Subcaudals, 39 single and 11 pairs; anal divided. Upper surface black, most of the scales of the dorsum with a yellow large median spot; lower surface lead grey, the anterior ventrals marbled with whitish. Length, 1070 mm; tail, 70. One example in al. Habitat, Cecil Plains, Queensland.

*DENISONIA nigra* n.s.

Eye large, greater than its distance from the mouth; rostral considerably broader than deep, but little visible from above; internasals about two-thirds as long as the prefrontals; frontals once and two-thirds as broad as long, once and a-half as long as its distance from the tip of the snout, shorter than parietals, scarcely broader than the supraculars; nasal entire, in touch with the single preocular; two postoculars; temporals, 2 + 3; six upper labials, third and fourth entering orbit; anterior chin shield the shorter and broader, in touch with three lower labials; scale rows, 15; ventrals, 126; subcaudals, 42, in one row; anal entire. Black above, a faint white line on upper edge of upper labials; below, ventrals edged with white, their centres white, spotted with black; under side of tail, flesh colour. One young example in al. Habitat, Tasmania.

Structurally, this snake approaches *D. superba* pretty closely; but for its smaller number of ventrals and greater of posterior temporals, one might suspect it to be a young melanotic individual of that species.

*DENISONIA fenestrata* n.s.

Eye small, shorter than its distance from the mouth; rostral broader than deep, not or scarcely visible from above; internasals less than half as long as prefrontals; nasals semidivided, far removed from the single preocular; frontal one-fifth longer than broad, as long as its distance from the tip of the snout, shorter than the parietals, two and a-half times broader than the supraoculars; two postoculars; temporals 2 + 2, the lower anterior as usual; six upper labials, the third and fourth entering the orbit; chin shields equal, anterior in touch with four lower labials. Scale in 17 rows round the body; ventrals, 167-175; subcaudals, 28-42 pairs; anal divided. Above dark reddish brown; scales all with yellow margins; beneath yellow, immaculate; upper lip and temples reddish yellow. Two examples in al. Queensland.

Sufficiently differentiated from its nearest ally in structure, *D. woodfordii*.



*DENISONIA angulata* n.s.

Between the genera *Denisonia* and *Hoplocephalus* the difference consists in the number of scale-rows and in the rounded or angular condition of the sides of the ventrals. In the present snake the scale rows are as in *Denisonia*, the ventrals as in *Hoplocephalus*.

Eye longer than its distance from the mouth, pupil round; muzzle short, rounded; rostral nearly twice as broad as long, just visible on upper surface; internasals much shorter than prefrontals; nasal divided, in touch with preocular, oblong; frontal one and a-half times as long as broad, as long as its distance from the tip of the snout, shorter than the parietals, much broader than the supraoculars; one pre- and two postoculars; temporals 2 + 2, lower anterior as usual; six upper labials, third and fourth entering orbit; three lower labials in touch with anterior chin shield, which is much the larger of the two; anal entire; scale rows round body, 17; ventrals, 186; distinctly angulated; subcaudals, 46, in one row. Brown, a bipinniform yellow nuchal collar, narrowly black edged anteriorly, posteriorly broader and ill defined; a black temporolabial V-shaped mark; lips black barred; throat black spotted and streaked; beneath paler; ventrals with dark edges. One example in al. Habitat, Queensland.

*DENISONIA frontalis* OGIL—variety *propinqua*.

In so close propinquity with Mr. D. Ogilby's *D. frontalis*, that, notwithstanding a large eye, longer and squarer head, and different colouration, it is safer to refer it to that species.

Eye longer than its distance from the mouth, pupil elliptic, erect; muzzle rather long, subquadrate; rostral twice as broad as long, appearing on the upper surface; nasal entire, oblong, removed from preocular; internasals (semifused with prefrontals) apparently nearly as large as prefrontals; frontal a third longer than broad, shorter than parietals, less than its own length from the tip of the snout, twice as broad as the supraoculars; one pre- and two postoculars; temporals 2 + 2, lower anterior as usual; six upper labials, third and fourth entering orbit; three lower labials in touch with anterior chin shield, which is about as large as the posterior; anal entire. Scale rows round the body, 19; ventrals, 161; subcaudals, 30, in one row. Head and nape above pale brown, relieved by a white band edged with dark brown, passing from the posterior temporals over the orbit to the end of the nasal, and by a white upper lip inclusive of the lower part of the rostral; dorsum nearly white, the scales edged with pale brown; below white, immaculate. One example in al. Habitat, Queensland.

*FURINA robusta* N.S.

Habit comparatively short and stout; head slightly distinct; eye about twice its diameter from the mouth; rostral more than twice as broad as deep, viewed from above about as long as



the internasals, as long as half the distance from the frontal; internasals shorter than prefrontals; frontal about twice as long as broad, shorter than its distance from the tip of the muzzle, about a third broader than the supraoculars, which are entirely on the upper surface; parietals as long as their distance from the tip of the muzzle; nasal elongate, in touch with the single preocular; two postoculars; temporals one and one; upper labials six, third and fourth entering orbit, fifth and sixth subequal; three pairs of chin shields, the posterior pairs small; scales in 15 rows; ventrals, 135; subcaudals, 18; anal divided; length, 280 mm.; tail, 19. Yellowish white, each scale with brown edges, annulated with black rings (the first on the nape), which above are about equal to the interspaces, below narrower and occupying two or three shields or two and a-half of the width of the shields before and behind them; the half rings on opposite sides, posterior region of head and spots on the sides black; throat with longitudinal black streaks. Locality, Coolgardie, West Australia. One example in alcohol, presented by Mr. R. L. Reid.

*MICROPECHIS crucifer* n.s.

Rostral much broader than deep, but appearing on the upper surface to a length equal to the internasal suture; internasals about four-fifths of the length of the prefrontals; frontal hexagonal, a little broader than the supraocular, more than twice as long as broad, about three-fifths of the length of the parietals. No cauthus rostralis; posterior nasal not in actual contact with the preocular; one postocular; two temporals, the upper much the larger; six upper labials, the third and fourth entering the orbit, the fifth largest; three lower labials in contact with the anterior chin shield, which is much longer than the others; anal divided; scales in 15 rows; ventrals, 185; subcaudals (two-rowed), 29. Length 397 mm.; tail, 42; head, 16 long by 9 broad.

A red vertebral line from tip of tail to back of head, where with a transverse band it forms a cross; continuing on the head it bifurcates on the frontal shield; sides black with an irregular median line of yellow spots, which anteriorly sends off short vertical lines above and below, posteriorly these short lines become a continuous longitudinal one, and lastly all break up into a confusion of close-set spots; ventrals half black, half yellow. Locality, uncertain; believed to be the Solomon Islands. One example.

The nasal is on the right side practically entire, as there is but a faint indication of division on its upper edge. No teeth appear above the gum behind the maxillary fang.

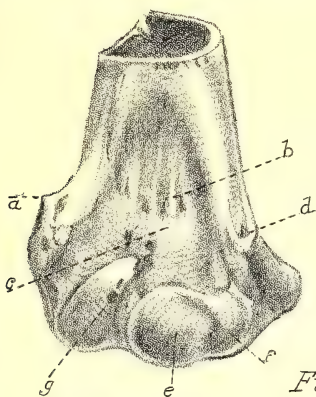
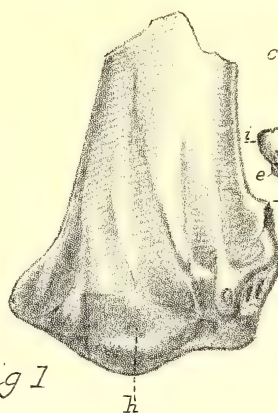


Fig 1



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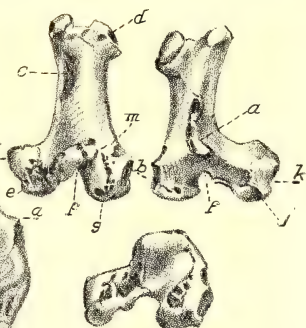


Fig 2



Fig 3



Fig 4

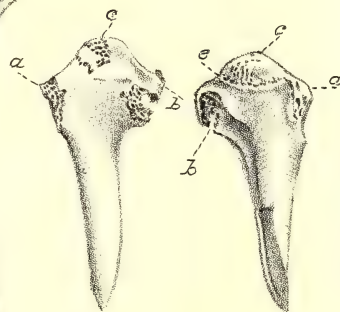


Fig 5<sup>a</sup>

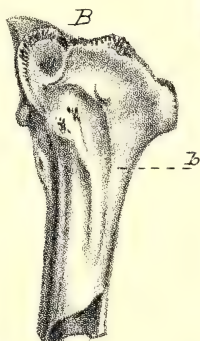
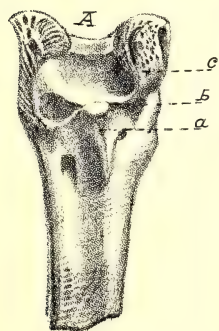
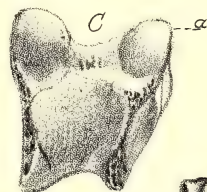
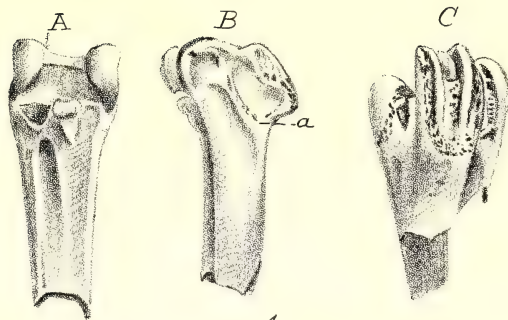


Fig. 6



Fig 5<sup>b</sup>

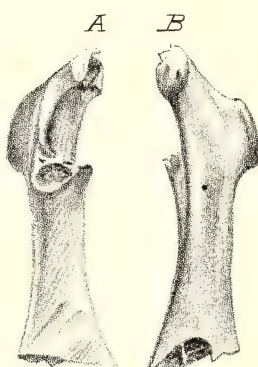




*Fig 1*



*Fig 2*



*Fig 3*



*Fig 4*



*Fig 5*



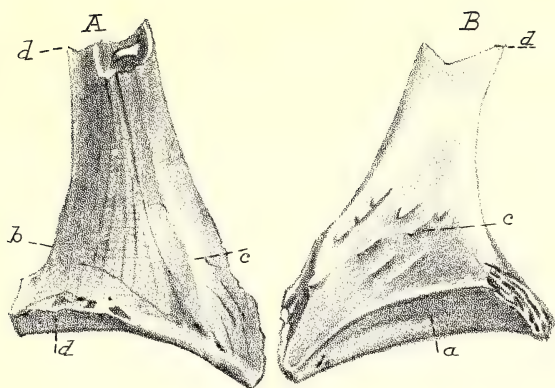
*Fig 6*



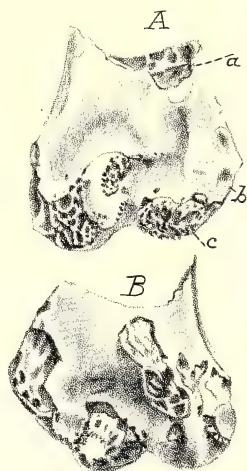
*Fig 7*







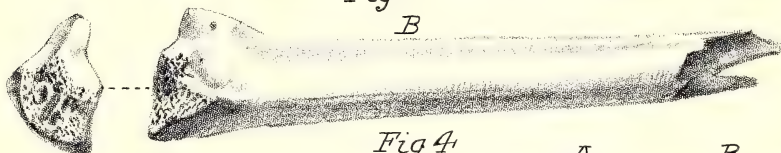
*Fig 1*



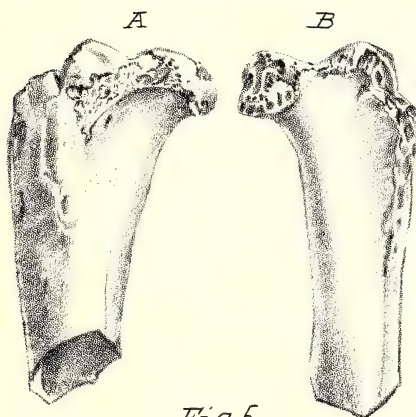
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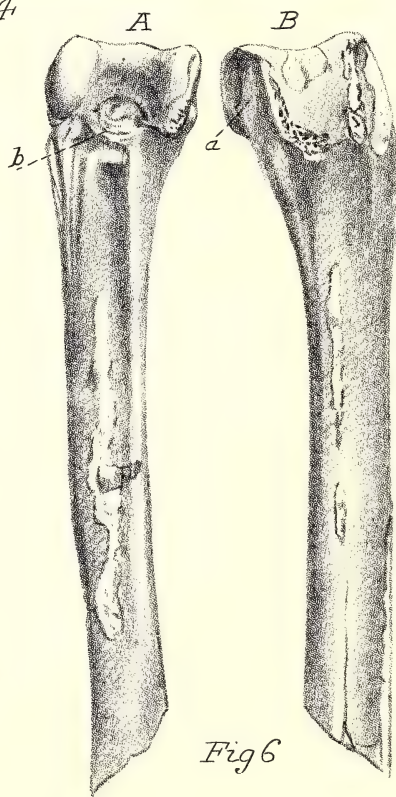
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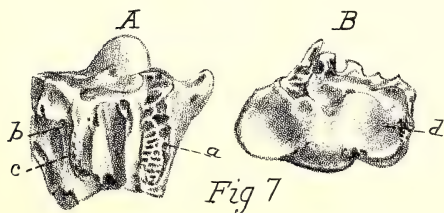
*Fig 4*



*Fig 5*



*Fig 6*

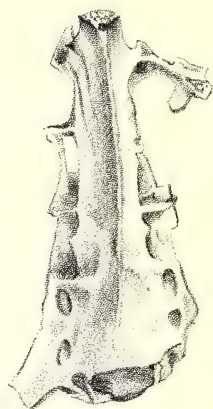


*Fig 7*

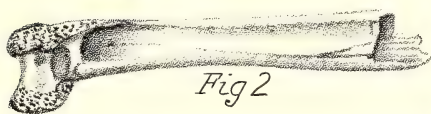




*Fig 1*



*Fig 3*



*Fig 2*

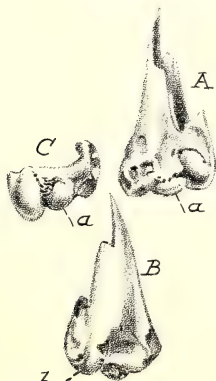


*Fig 4*

*Fig 5*



*Fig 6*



*Fig 7*



*Fig 8*

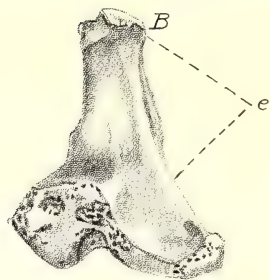
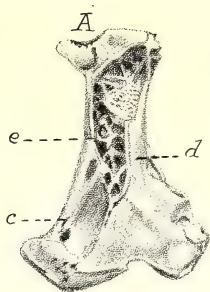


*Fig 9*





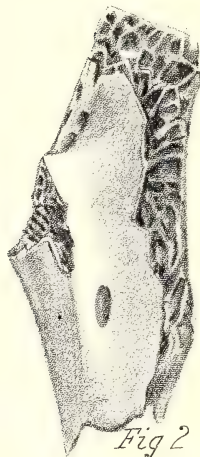




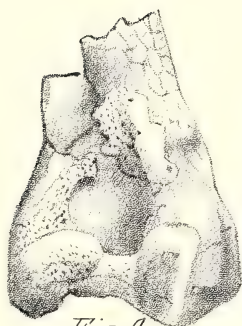
*Fig 1*



*Fig 3*



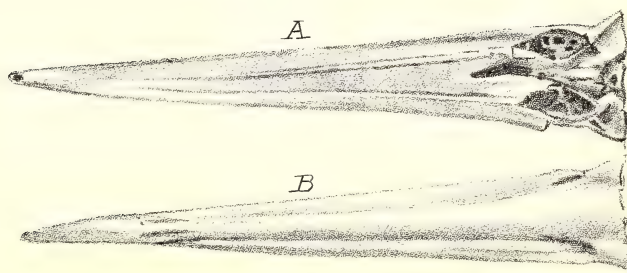
*Fig 2*



*Fig 4*

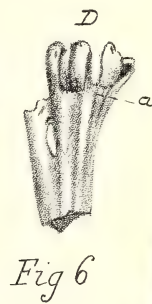
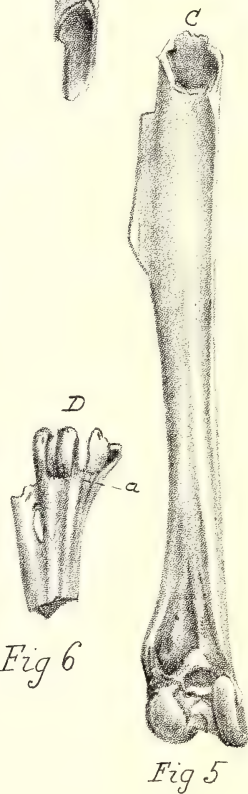
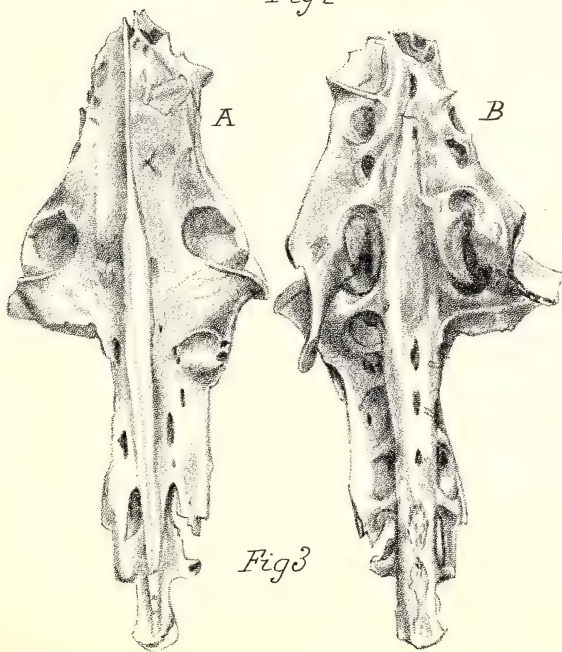
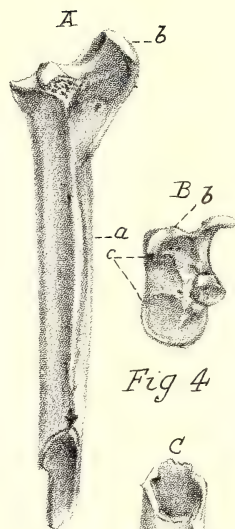
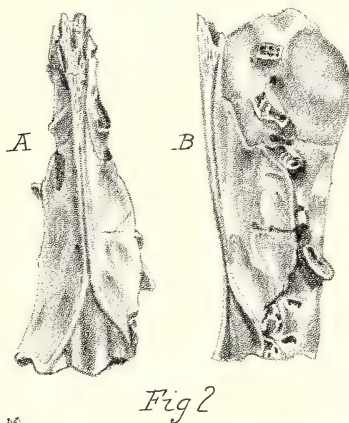
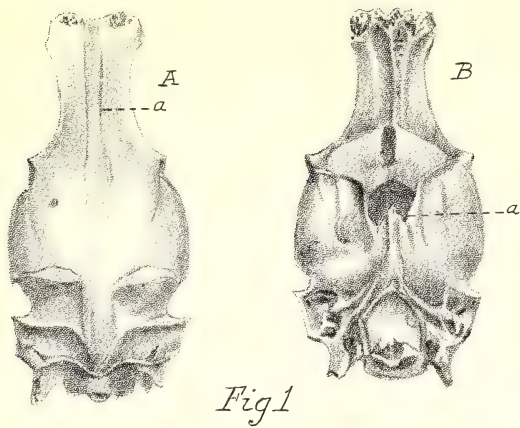


*Fig 5*



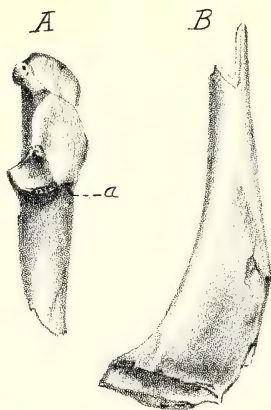
*Fig 6*



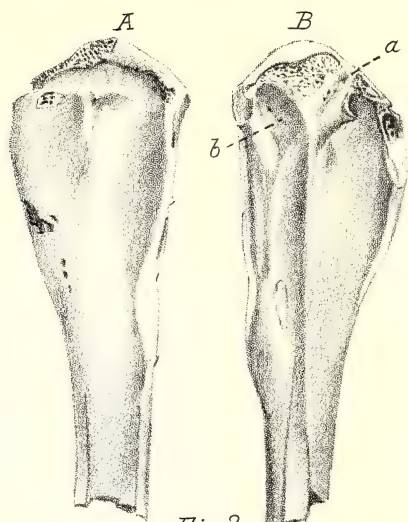




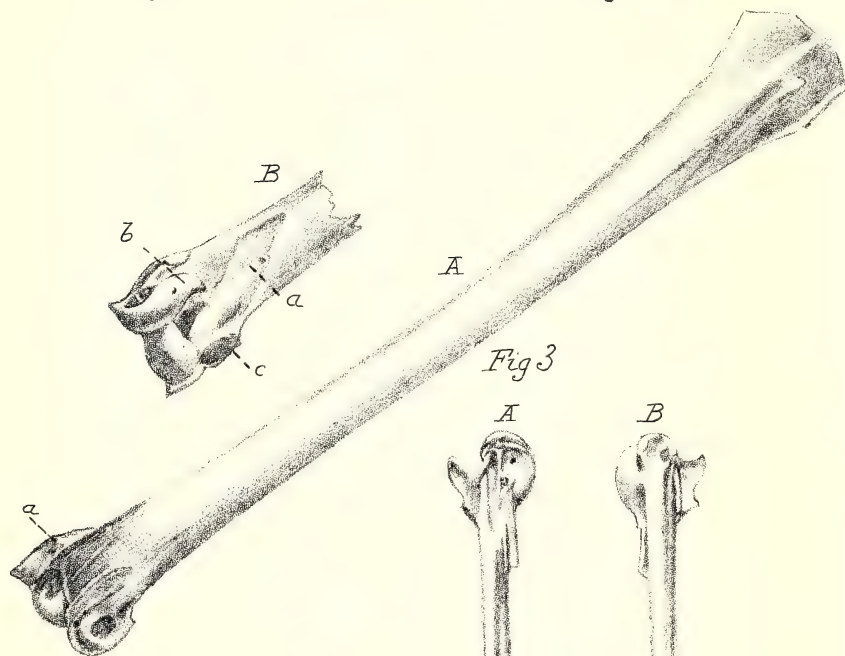




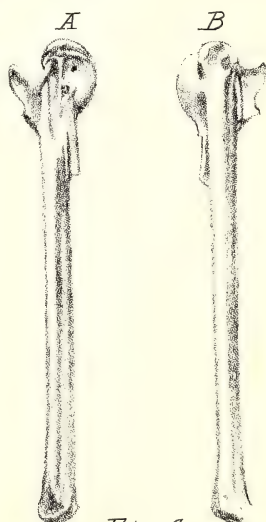
*Fig 1*



*Fig 2*



*Fig 3*



*Fig 4*



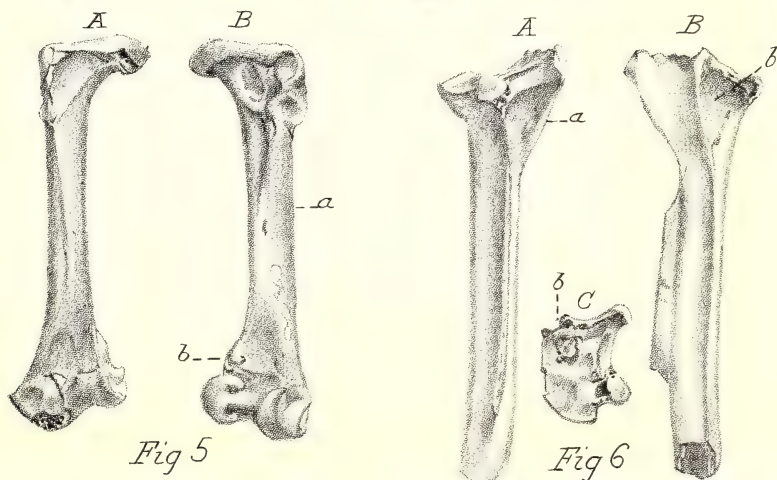
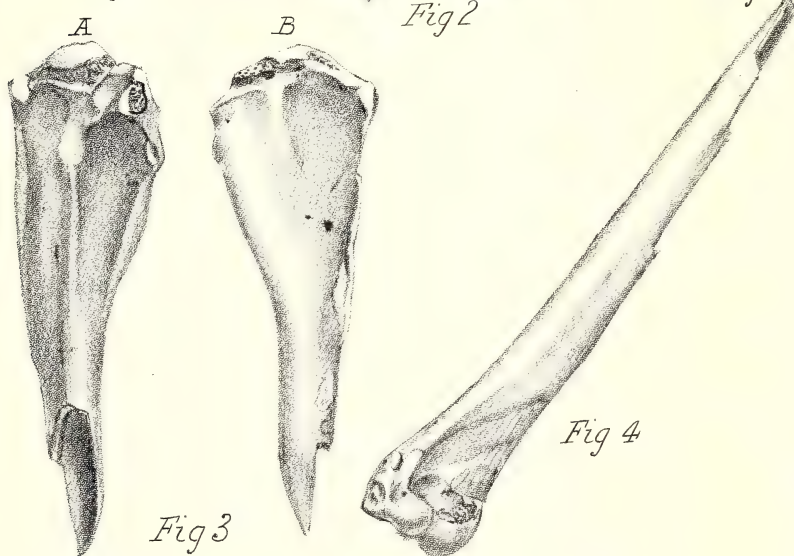
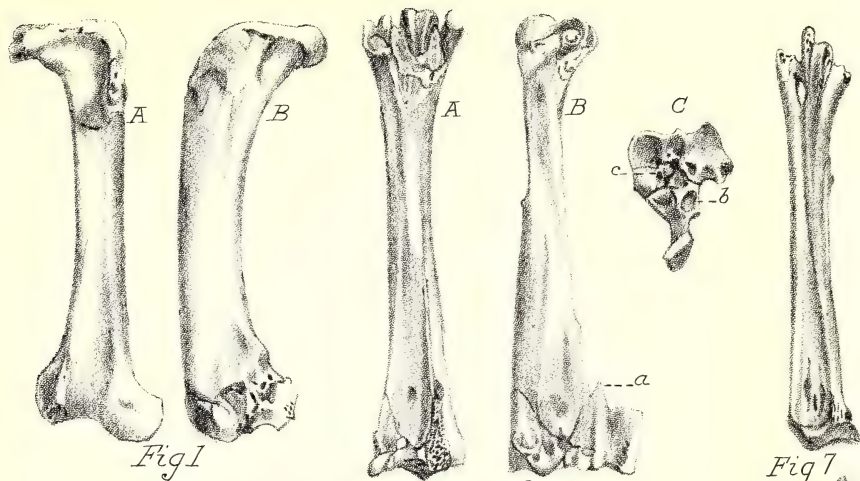








Fig 1



Fig 2

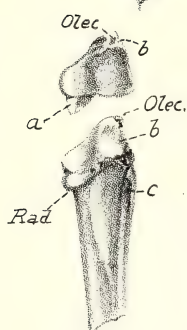


Fig 3

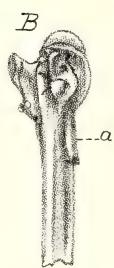


Fig 4



Fig 5

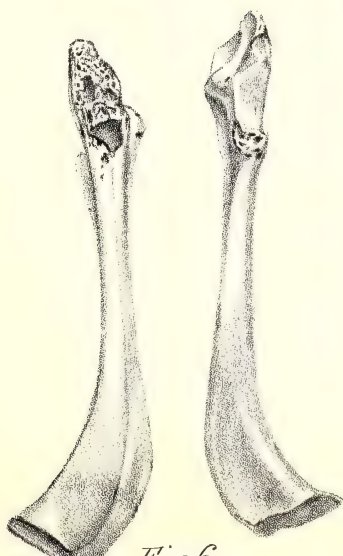


Fig 6



Fig 7



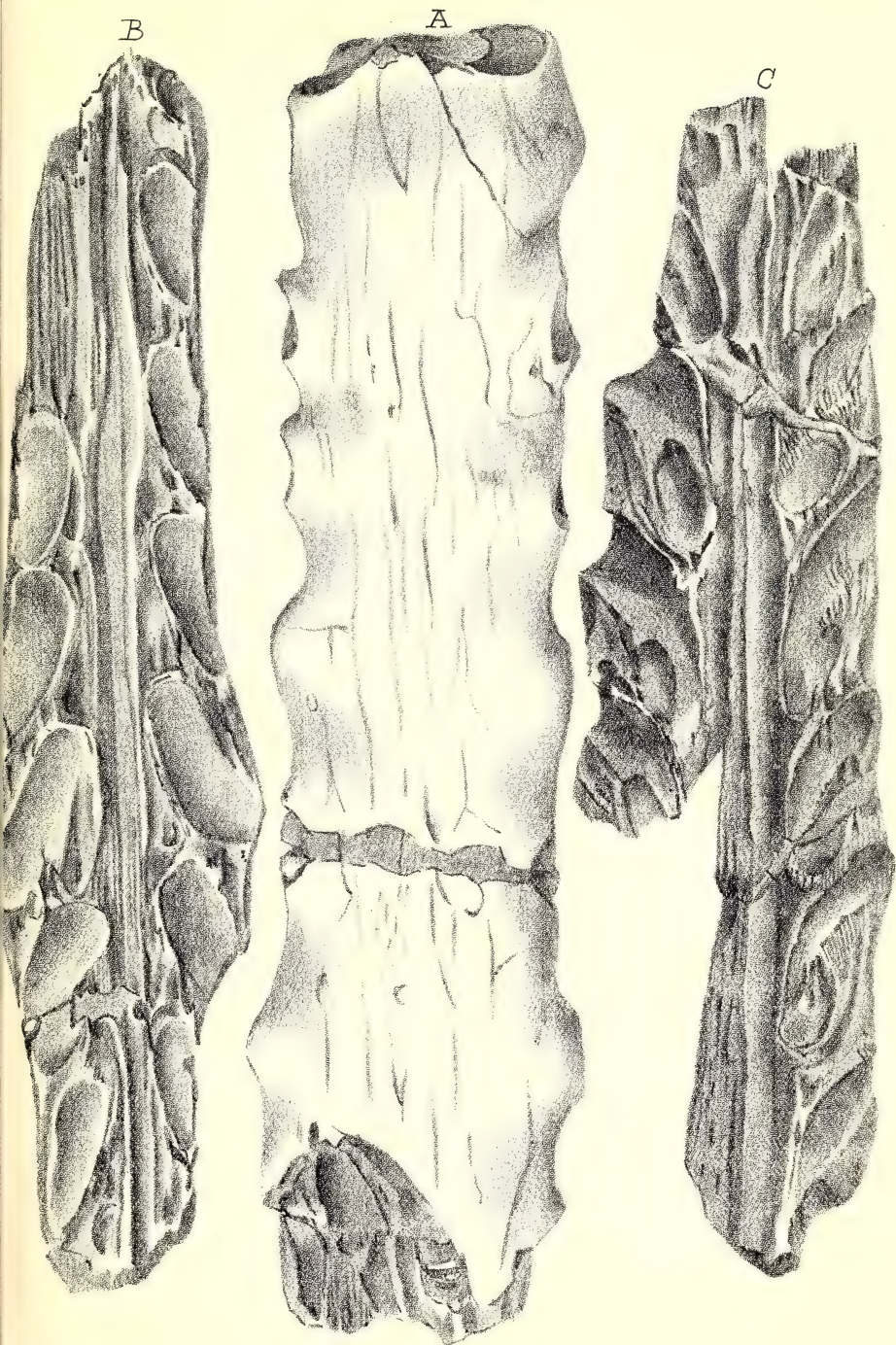
Fig 8



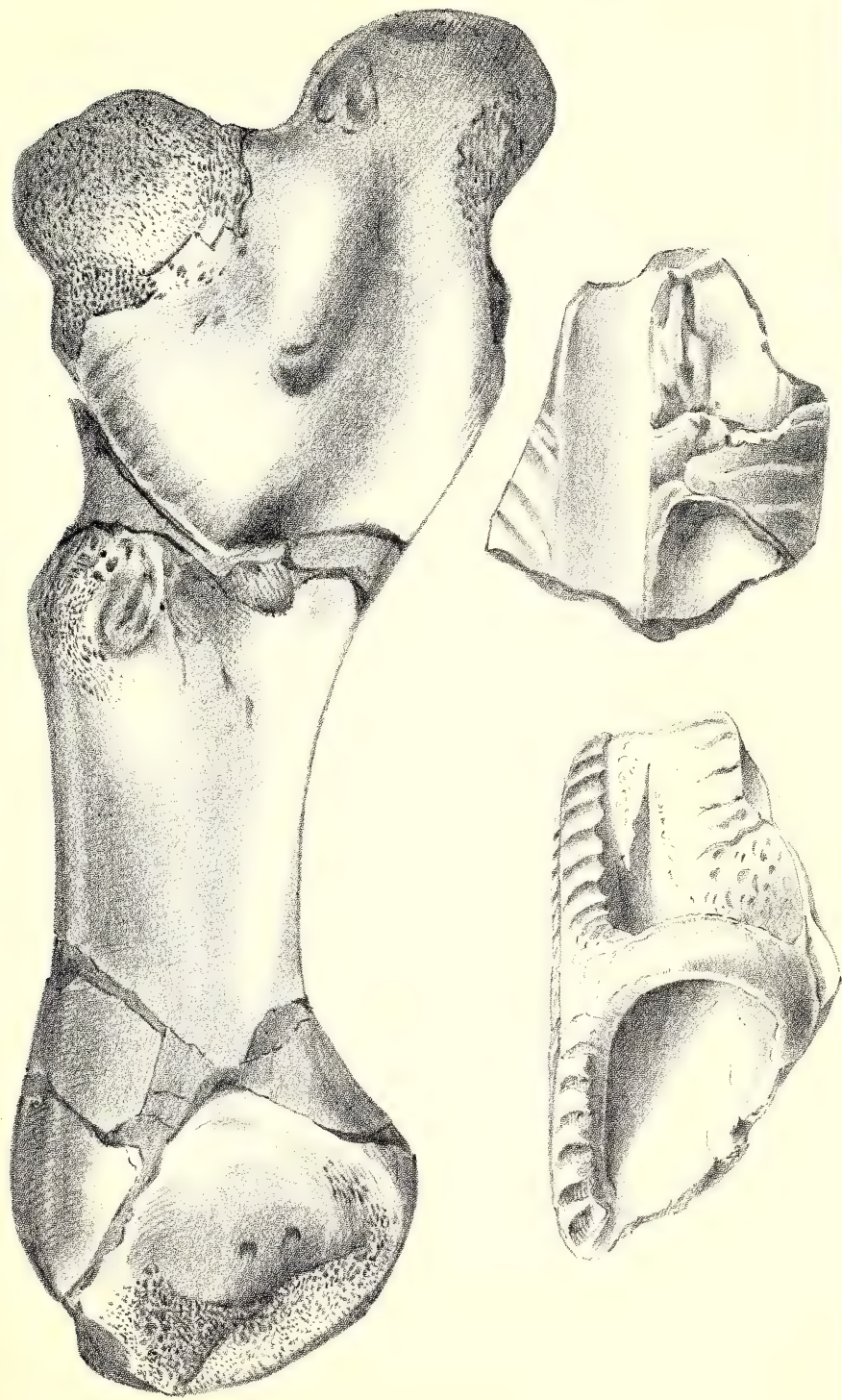






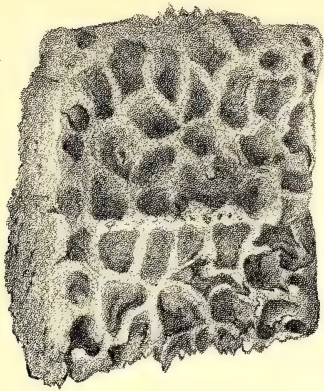




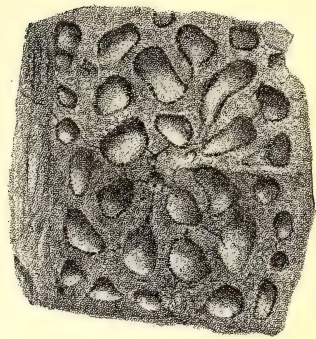




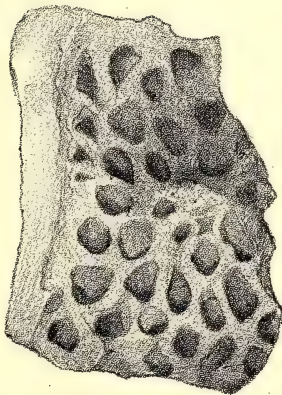




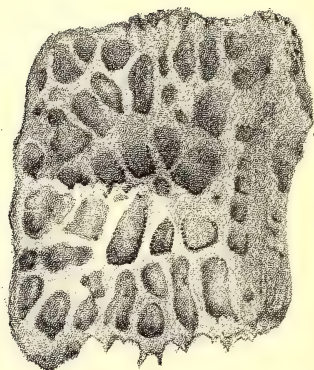
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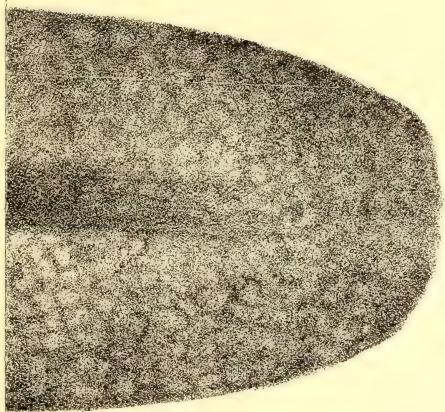


2

1,2 *Crocodilus johnstoni.*  
3,4 " *species fossil.*







*F. Elliott, Lith.*

*New Guinea Charm.*





F. Elliott, Lint

*New Guinea Charm.*







*Calyptoprymnus verecundus.*





*Abdominal fold, reversed*

*Caudofemoral fold, reversed*

*Diagrammatic view of abdominal  
and caudofemoral folds*

*F. Elliott, Lith.*

*Calyptoprymnus verecundus.*



ANNALS  
OF THE  
QUEENSLAND  
MUSEUM.

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No. 7.

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OCCASIONAL NOTES

By C. W. DE VIS, M.A.

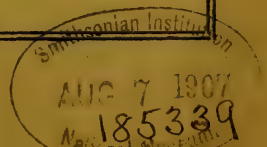
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BY AUTHORITY OF THE TRUSTEES.

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ANNALS  
OF THE  
QUEENSLAND  
MUSEUM.

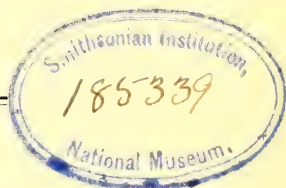
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## Fossils from the Gulf Watershed.

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THE bones from the Leichhardt River lately collected under the auspices of the Department of Agriculture by Mr. Stock Inspector Buhot, and referred to me for examination, have not the good fortune to increase to any notable extent our knowledge of the extinct fauna represented by them. The animals which once owned them were few both in number and kind compared with the wealth of diverse forms which in their day of life the country was nurturing. Moreover, the relics are almost invariably mere fragments, greater or less in size, and sometimes also much waterworn—conditions easily acquired during a rough passage down the bed of a river, but naturally rendering them difficult of study.

Of the 43 which have escaped utter destruction and retain features helpful to recognition, eight were of reptilian origin. The remainder were derived from marsupial mammals and mostly from those giants of the Order whose bones were massive enough to partially resist the shocks and attrition to which they have been subjected.

Most of the fossils were, by the foresight of Mr. Buhot, marked with distinguishing numbers, each indicating the precise locality of collection. Numbers 1 to 6 and No. 34 are from "the top crossing" of the river, 7 miles below Augustus Station; No. 7 to 16 from Floraville Post Office; Nos. 17 to 46 (No. 34 excepted) from the river bed and conglomerate on the banks at Floraville Crossing. The retention of these numbers may possibly be of use should further investigation on the spot be undertaken.

The contents of the collection are specified below under the name of the animal to which each bone is thought, with certitude more or less perfect, to belong. Until bones of most of the very numerous species now extinct occur in organic connection with skull or teeth, or in company with them so close that no doubt can remain about their specific identity, their ascription to one or other species or even genus is entirely a matter of opinion liable at any time to be proved erroneous by fresh discovery.

### MAMMALIA—MARSUPIALIA.

#### FAMILY NOTOTHERIIDÆ.

##### DIPROTODON AUSTRALIS, Owen.

The unequalled size of bones of the Greater Diprotodon renders them easy of recognition :—

Right ramus of a mandible, with the symphysis and roots of the incisor tusks and with the last three molars (the hinder lobe of No. 3 excepted) in place; the ascending process wanting.—No. 31.

Vault of a cranium from the occiput to the middle of the orbit, but lacking the occipital condyles and the zygomas.—No. 16.

Hinder part of the ascending process of a left mandible; condyle imperfect.—No. 30.

Left ramus, symphysis, roots of incisor tusks, basal region of ascending process and last two molars of a mandible.—No. 24.

Basal half of a left tusk socketed in a fragment of a mandible.—Nos. 31 and 34.

Part of a tusk—No. 32.

Left moiety of an axis vertebra.—No. 23.

An imperfect lumbar vertebra devoid of processes—No. 1.

Distal end of a right femur.—No. 9.

Fragment of bone.—No. 38.

#### SIMOPROSOPUS, n.g.

It has fallen to my lot to take exception more than once to Owen's identification of the skull named *Zygomaturus* by Macleay with the mandibles to which the former had given the generic name *Nototherium*. I cannot but think that sufficient evidence of the incorrectness of the disputed decision has already been adduced; nevertheless, the support of the jaw mentioned below is far from unwelcome. Unfortunately, Macleay failed to observe the rule which strictly requires that a new name shall be announced in a publication addressed to the scientific world. This can hardly be said of the "Sydney Morning Herald," the sole repository of the name used by the author at its inception. Under these circumstances it becomes necessary that the genus should receive a new name, and for an emphatically flat-faced, snub-nosed creature the one above written seems appropriate.

#### SIMOPROSOBUS TRILOBUS MACL.

Posterior moiety of a left mandible with the penultimate molar m.2 in place and remains of the last molar, m.3. The diameter of this jaw, drawn through the roots of m.3, is 85mm. in length, the index of a massiveness far exceeding any to be found in typical mandibles of *Nototherium*, yet the teeth are no larger than those of *N. mitchelli*; they are about the same in length, but inferior in breadth.—No. 39. It was from the locality indicated by this number (Floraville) that the mandible brought under the notice of the Royal Society of Queensland (October, 1894) was procured.

Hinder portion of a cranial vault, broken and imperfect.—No. 14.

Fragment of a jaw, with remains of two molars.—No. 10.

Distal end of a femur, much waterworn.—No number.

Large fragment from the middle of a long bone.—No. 17. This, however, may be from the Lesser Diprotodon, *D. minor*, *Hux.*

Outer condyle of a femur.—No. 23.



## NOTOTHERIUM MITCHELLI, Owen.

Part of the centrum of a dorsal vertebra.—No. 2.

Fragment of a mandible, with remains of two molars.—Nos. 3 and 10.

A long and broad plate of bone which, so far as can be seen of it, appears from certain indications to be the blade of a scapula, much weathered and broken before burial and now encrusted with matrix which it is not worth while to remove.—No. 25.

Distal end of a femur, imperfect —No number.

Piece of a rib.—No. 33.

Distal moiety of a humerus minus the articular region.—Nos. 2 and 8. In the like condition and probably from the same skeleton as No. 25.

Fragment from the middle of a humerus —No. 13.

Piece of the head of a tibia (?).—No. 44. A fragment difficult to determine satisfactorily.

A fragment of a long bone with tooth marks of Thylacoleo.—No number.

## EUOWENIA GRATA, de Vis.

Part of a lumbar vertebra.—No. 2.

Portion of a mandible —No. 12,

Greater part of a young ulna, wanting the epiphysis at the proximal end and a portion of the shaft with its articulating surface at the distal end.—No. 35. If this is rightly determined, Euowenia had a longer forearm than other Nototheres.

## MACROPODIDÆ.

We know certain bones of one extinct kangaroo—*Macropus faunus*—but it would hardly be judicious to identify with them bones from Northern Queensland merely on account of correspondence in size. The teeth of *M. faunus*, however, intimate that it was equal in dimensions to *M. magister*; and, since this indirect clue to the identification of bones of the larger kangaroos is the only one available, the specimens following are provisionally referred to *M. magister*: more especially as this happens to be the commonest of the extinct Macropods.

## MACROPUS MAGISTER, de Vis.

A fragment of the ischiadic bone of the pelvis —No. 3.

A fragment of the iliac bone of the pelvis.—No. 3.

A splinter from a long bone.—No. 6.

Fragment from the head of a tibia.—No. 11.

Head of a right tibia, articular surface fairly perfect.—No. 37.

Proximal two-thirds of a fifth metatarsal of a left foot.—No. 42.

Part of the distal end of a femur.—No number.

## PHASCOLOMYIDÆ.

## PHASCOLONUS GIGAS, Owen.

Remains of the distal third of a humerus.—No number.

Connected bones of the tarsus—namely, astragalus and calcaneum.—No. 27.

## PHASCOLOMYS MITCHELLI, Owen.

A basal phalanx of the fifth toe of the right foot is probably referable to this Wombat or to one of about the same size.

## REPTILIA.

## CHELONIA.

## CHELYMYS ARATA, de Vis.

Three pieces of the carapace.—No. 4.

## CHELYMYS GRANULATA, de Vis.

One piece of the carapace.—No. 17 a.

## PELOCOMASTES AMPLA, de Vis.

One piece of the carapace.—No. 17 a.

Two pieces of the plastron.—No. 26.

## CROCODILIA.

## PALLIMNARCHUS POLLENS, de Vis.

The greater part of a right mastoid, 87mm. broad on outer surface, with a portion of the attached exoccipital.—No. 20.

Portion of a malar, apparently, but scarcely determinable — No. 45

Several pieces of a decomposed skull, with a few teeth.—No. 45.

Fore end of a mandible, with symphysial surface and sockets of seven teeth, much waterworn.—No. 36.

Dorsal scute, 105mm. broad.

A rumour gone abroad on the banks of the Leichhardt has it that human bones have been seen in the bed of the river. The coloured natives around are said to declare that they are the "bones of blackfellows turned to stone." One must be cautious about giving implicit credence to an assertion which, on first hearing, is, to say the least, startling. Yet the blacks, whose care of the bones of their dead should make them familiar with those relics, ought to be able to distinguish them at sight from bones of other animals, and what they might hope to gain by pretending to recognise them among others is not clear. Whatever of truth or falsity there may be in the rumour, the relics in question are, presumably, still on the spot; but, as Mr. Buhot found, covered up by some tons of conglomerate—the result of a late slip from the bank. The discovery of relics of human origin

in company with the bones of our extinct animals would not be unprecedented ; that discovery has already been made in Victoria \* But further evidence is so very desirable that no seeming opportunity of obtaining it should be lost. In the present instance, the question raised on the banks of the Leichhardt should be settled by a thorough search of the spot in which the bones are said to lie, and this search is strongly recommended.

---

\* I take the opportunity of mentioning a fact of some importance which was omitted from my notice of the implement and bones found in Victoria. (R. Soc. Vict. 1899, p. 81.) I should not have failed to say that they occurred beneath a bed of basalt.

---

## An Eccentric Rat.



For an introduction to this rat we are indebted to the observer by whose name it may fitly be honoured—Mr. E. J. Banfield, Honorary Keeper of Dunk Island, an island lying a little to the north of Cardwell, in lat. 15, long. 145. Some while ago that gentleman aroused our curiosity by informing us that a rat upon the island made little or no nest for its young, but carried them about clinging to its back or to the outer side of its thighs—a habit, to say the least, very unusual among rats and mice of the genus *Mus*. The female first sent to us by Mr. Banfield as an example of the species had no young with her, nor were her mammae much in evidence: consequently, the advent of a specimen caught in the act of carrying young was awaited with interest. Fortune at length favoured our correspondent with an opportunity of placing the correctness of his observation beyond question. Of the second example procured by him, he writes: "The other day my dogs turned out a rat which made its escape from them by climbing a shrub, and I was able to secure it. You will see that it has a pair of infants attached to the teats . . . I chloroformed the mother, and noticed that the young lived some time after her." On arrival the young were found detached. The conical corrugated nipples are, compared with the size of the animal, very long: one, especially, 20mm. in length, calls to mind a marsupial teat.

Mr. Banfield finds this rat to be gentle in disposition, never attempting to bite; it is, therefore, fortunate for it that it is under the protection of one who conserves the native life of the island so strictly that he will not allow a gun to be fired on it.

### UROMYS BANFIELDI, n.s.

Habit short and full bodied; size about half that of a Black Rat (*M. rattus*); limbs moderate in length, and rather strong; teats 4. inguinal. Fur short, soft, the hairs simple, nearly uniform in length, a few only somewhat elongated; whiskers moderate. Teeth much as in *U. macropus*, but in the lower jaw the second molar is the broadest; in the upper it is nearly as broad and almost as long as the foremost. In the skull the cranium is thin-walled and translucent, the parietal ridges very feeble, the auditory bullae small; the anterior root of the zygoma near the upper part of its root very slender; the anterior edge of the root convex; the incisive foramina broad and (on one side) reaching to the socket of the first molar.

Colour : Above, russet brown, the hairs lead gray for the basal two-thirds of their length, thence to the tip rufous ; fore and hind paws on upper side pale grayish brown as far as the digits, which are white ; all below, white, the lips brownish white ; tail and a narrow ciliary edge black.

Dimensions :—

|                   | mm.          |                                 | mm.         |
|-------------------|--------------|---------------------------------|-------------|
| Head and body ... | 140          | Fore limb to elbow              | 31 = .221 % |
| „ to root of ears | 35 = .25 %*  | Tibia ...                       | 36 = .257 % |
| „ to eye ...      | 20 = .143 %  | Hind foot ...                   | 28 = .2 %   |
| Tail ...          | 152 = 1.09 % | Fore „ ..                       | 10 = .07 %  |
| Ear ...           | 15 = .107 %  | Skull ...                       | 37 = .264 % |
| Fur of back ...   | 9            | Skull—breadth of<br>zygomas ... | 11          |

---

\* Percentages of the length of the head and body.

---



## A New Guinea Tree Rat.

In the absence of any account in available literature of an unusually large rat inhabiting country at the head of the River Aroa, in British New Guinea, the following descriptive notes concerning it are offered, on the presumption that they may add something to our knowledge of the rat, even though it should have been previously described :—

Dimensions of an adult male :—

|   | mm. |
|---|-----|
| Length of head and body, following dorsal contour of skin ... | 435 |
| Ditto                      abdominal      do. ...             | 380 |
| Length of tail ...  | 365 |
| " of head to a line joining anterior roots of ears ...        | 80  |
| " from tip of nose to anterior canthus of eye ...             | 41  |
| " from posterior canthus of eye to the ear ...                | 36  |
| " of ear ...  | 13  |
| " of forefoot ...   | 40  |
| " of hind foot ...  | 68  |
| " of whiskers ...   | 130 |
| Breadth of head between the ears ...                          | 34  |
| " of body across the loins ...                                | 178 |
| "                      " chest ...                            | 100 |
| Skull, length ...   | 77  |
| " breadth across zygomas ...                                  | 42  |

Head short, broad, and convex ; ears naked, and so short as to be nearly hidden by the fur ; whiskers very strong and long, reaching to the middle of the arm ; body extremely broad ; legs short and powerful ; tail shorter than body and head, practically naked ; its scales very broad and short, measuring near its base 9 to the centimetre in length and 4 in breadth : imbricated longitudinally but not transversely, so that they run together in oblique rows : corrugated on the apical half of the dry skin, smooth on the basal. Nostrils and feet murine, 5th digit of hind foot of normal length.

Hair cylindrical. Fur, 30mm long on the back, dense, soft at base ; on body and outer side of limbs beset with numerous long (58mm.) and harsher hairs.

Hair of the head radiating from a spot over the centre of the nasals ; of the tail—scanty, short and feeble.

Colour : On upper surface, grizzled brownish gray, deepening to nearly black in lines and blotches on the middle of the back, shoulders, nape, and about the head, where a line runs obscurely above the eyes to meet its fellow on the snout in front of the radiating point. Base of the dorsal fur pale gray with some tips whitish, others black and brown, the mixture, aided by the long hairs, which are pale at the base, dark in the middle, and nearly white at the tip, producing the grizzled appearance. Cheeks, limbs, sides of rump, and scrotal region rufous brown ; fore and hind feet blackish brown. Below, from upper throat to penis, and on inner surface of limbs, isabelline. Incisors : Upper, pale brown ; lower, isabelline. Tail, above and below, dark brown on basal moiety, paler on apical. Whiskers, black.

Skull : Premaxillaries deep (14mm.) ; posterior edge of infra-orbital fissure straight, without projection anterosuperiorly ; supra-orbital edge at junction of zygoma and frontal with a strong process posteriorly, at junction of squamosal and frontal elevated into a pronounced ridge ; parietal ridges moderate, frontals conspicuously tumid anteriorly ; incisive foramina as long as the molar series, not nearly reaching the teeth, wide (disclosing a broad vomer) with a contraction near the anterior end ; auditory bullæ thickly walled, its orifice directed unusually backward.

Teeth : Upper molars in a series, 16mm. long ; first molars 5mm. broad, and in breadth six-fifths of that of the intermediate palatal space ; third, as long as the second but narrower, width 3mm. ; first molars with a central row of three horseshoe folds, two ear-shaped folds, on the inner, and two much smaller on the outer ; the second has two central and two inner folds, like the first, but only one on its outer side ; the third is like the second, but has no fold on its outer side ; these folds form regular longitudinal rows, slightly divergent posteriorly. Lower molars in a series, equally broad fore and aft, the enamel folds on each form double loops, three on the first tooth (the foremost very small) and two on each of the second and third ; the bases of these loops are directed forward, those of the upper teeth backward. Altogether, the teeth, in breadth and armature, have no little resemblance to those of *Mastacomys*. Incisors not grooved.

Habitat : The collector states that this rat is arboreal.

The structure of the teeth—approaching that of *Mastacomys* ; features of the skull—reminding us of *Uromys* in an exaggerated form, the peculiar lepidosis of the tail ; the huge size and massiveness of the body ; the radiation of the hair of the head—reminding us of the tree kangaroos, and thus significant of strictly arboreal life : these form an assemblage of characters which seems to confer generic rank.

But, though this rat came to me with an assurance that other specimens obtained were so disposed of that it could not have been named, I feel hardly justified in running the risk of perpetrating a synonym, otherwise I should propose for it the name *Dendrosminthus aroaensis*.

## A Papuan Relic.

---

By the liberality of Mr. W. Trotter, of Murua (commonly called Woodlark Island) the writer has been fortunate enough to obtain evidence confirmatory of a late conjecture of his, one which man possibly or probably have seemed to require additional proof. Certain objects noticed in the last number of these annals (No. 6), under the heading "Papuan Charms," were thought to shew that in the past New Guinea has been peopled by a race on a higher level of civilization than that of its present occupants. Support of the inference now comes in the shape of a stone pestle or muller, which not only tells the same tale of superior art, but may through its environment, yield some indication of the degree of antiquity allowable to its artificer. The implement, represented on Plate I, was met with under 3 feet of superficial gravel at the bottom of the same extinct river-bed whence were extracted the fossil bones of dugong, turtle, and crocodile described in the number aforesaid. In form it reminds one most of a short hyacinth glass with a bulb of the plant in its usual position. Its base is, as it should be, gently and regularly convex; its conical body, suddenly dilated above into a thick collar, affords to the hand a steady firmness of grip; an obtusely conical and quite unnecessary knob, surmounting the collar, testifies to an impulse of the artistic faculty. As a whole, it is as symmetrical as one could expect of a work done without rule and callipers; the periphery of a transverse section taken across the plane of any of its short diameters deviates but little from a true circle.

Its dimensions are these:—Total height, 169mm.; diameter at base, 88mm.; at neck, 43mm.; of collar, 54mm. The material chosen for its manufacture by its designer was a fragment of diabase or diorite, the rock which an obliging correspondent, Mr. J. Taaffe, informs us is the prevailing geological feature of the island, and apparently the toughest stone to be met with there. In the implement it is now decomposed and partly kaolinised to a depth which cannot be ascertained without risk of injury to the specimen. Its surface is roughened by the granules of an ochreous crust, 3mm. in thickness, derived from the ferruginous constituents of the rock or from the superincumbent gravel. Where the surface has been abraded by the pick, the colour of greenstone is still, though faintly, visible.

What purpose this well-made instrument was made to serve can hardly be a matter of doubt; it is sufficiently indicated by the convexity of its base and handy form of its body. On placing it in the hands of a friend, he at once grasped it as the man who made it, or his wife, grasped it, and made with it, as did they, the motions proper for the reduction of substances to powder. On the other hand, the natives of the island, when shewn the relic, declared that they did not know the use of it; a fact by no means surprising, considering their only substitute for it, a natural pebble. Had they found the

strange object themselves, they would have made a fetish of it, without doubt.

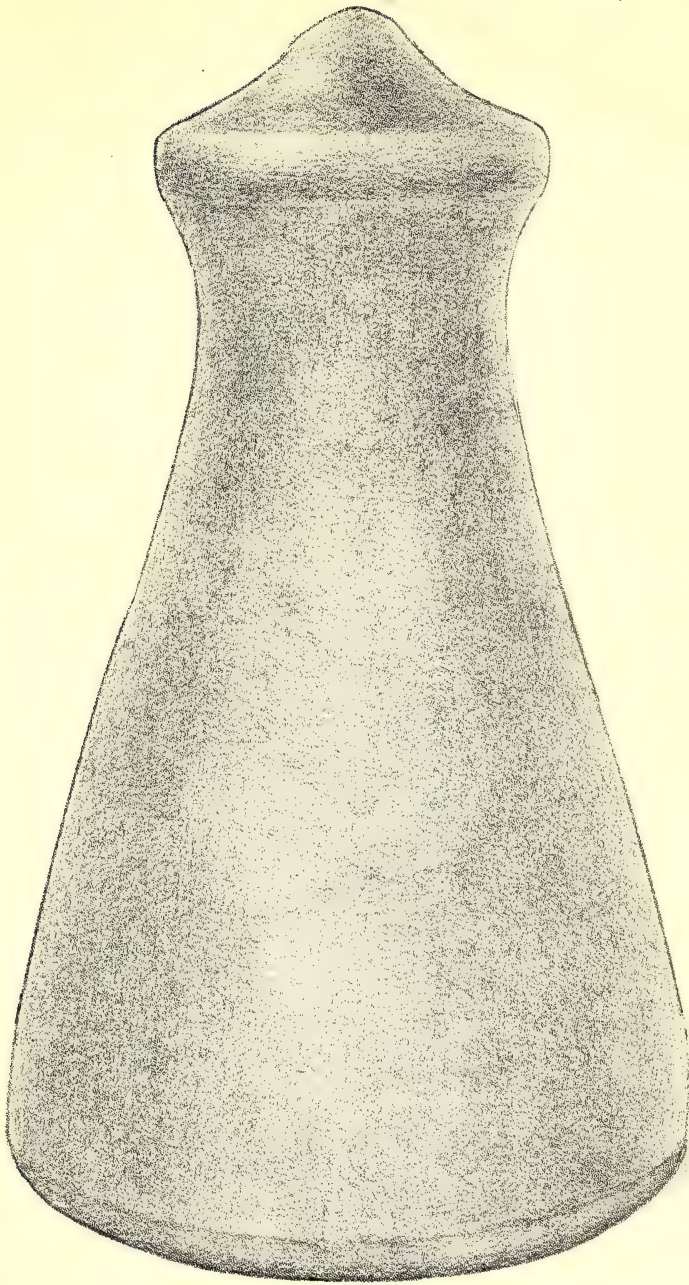
We hear from Mr. Taaffe that a second specimen of the implement has been discovered in the river bed. This we have not yet had an opportunity of examining, but our informant states that it is very similar to the one described, only differing from it somewhat in shape.

Bethinking ourselves of a caution accepted by experience, we must admit that the burial of products of human handiwork and of fossil bones in the same river bed does not of itself prove that the two are of the same age, unless they were found in contiguity, immediate or approximate. Awaiting information on the point, we must meanwhile be content with probabilities, and these are in favour of contemporaneity. If "prehistoric man" in Europe was early enough and artistic enough to leave us spirited gravings of the mammoth and horse of his day, and carvings of reindeer worked out of their own antlers; if the pestle used as a fetish in New Guinea is of the same type as tertiary pestles found under the soil of California; if man in Australia made implements out of the bones of extinct beasts and left them to be found under lava, at a depth of 238 feet; we can hardly doubt that he has survived in New Guinea while some other animals, at least, have succumbed to unfavourable changes in their environment.

Woodlark Island lies at a distance of 180 miles E.N.E. of the extreme Southern point of British New Guinea. Its short diameter measures 15 miles; its long one, trending parallel to the New Guinea coast, 41 miles. Nearly one-half of its surface is covered with masses of coral lying in the utmost confusion and permeated by modern watercourses. The chief of the latter crosses the island near the middle of its length, and is the old river bed in which the fossil bones and the present relic were found. It is described as of great width and depth, carrying, therefore, such a stream as Horace may have imagined when he wrote the line which has proved more famous than truthful: "*Labitur et labetur*," &c. A channel of so great capacity must have drained a watershed vastly greater than the 500 or 600 square miles of the Island. In which direction—east or west—lay that vanished land? Could the direction in which the river flowed be ascertained, the question would have a ready answer, if not a quite perfectly satisfactory one. The occurrence, on the mainland of New Guinea, of relics alike to this pestle in its teaching, naturally suggests that, during the age of the people that made them, the lost land stretched towards the west, possibly uniting the two islands. These records of their industries, sunken in a river bed or converted into supernatural agencies by a credulity which is far from being extinct among ourselves, have survived the ages occupied by the submersion of eastern New Guinea and the subsequent rise of Murua. That Murua has risen, from a moderate depth at least, we know for certain. Our correspondent, Mr. Taaffe, informs us that around the middle of the island rises hilly land to a height of over 300 feet, and that at that level are to be seen sea shells—notably huge clam shells.







*New Guinea Pestle*



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# ANNALS OF THE QUEENSLAND MUSEUM.

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No. 8.

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## LIST OF THE MOSQUITOES OF QUEENSLAND

WITH THE ORIGINAL DESCRIPTIONS AND NOTES ON  
THE LIFE-HISTORY OF A NUMBER.

By THOS. L. BANCROFT, M.B., EDIN.

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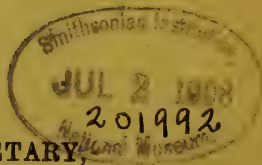
BY AUTHORITY OF THE CHIEF SECRETARY,  
HON. WILLIAM KIDSTON.

C. J. WILD, ACTING DIRECTOR.

PUBLISHED MARCH 23rd, 1908.

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The Culicidæ have been studied of recent years by Fred. V. Theobald, M.A., and others, and a monograph of them published by the British Museum.

In the monograph the characters of the family Culicidæ are given, as follows:—

Head small and more or less rounded, the occiput covered with scales; eyes reniform; ocelli absent; mouth in the form of a proboscis, which is formed of the following parts:—(1) a long pointed upper lip or labrum, united with an accessory piece, the epipharynx; (2) a long gutter-shaped lower lip or labium, ending in two jointed spatulate labella, which appear to be the labial palps; (3) two narrow needle-like mandibles; (4) two thin maxillæ, ending in serrated or barbed edges; and (5) a single piece of extreme thinness, the so-called hypopharynx; the whole being enclosed by the upper and lower lips. The palpi may be long or short, and vary in the number of joints; in *Culex* they are short in the ♀, long in the ♂; in *Anopheles* long in both sexes; in *Ædes* short in both sexes, etc.; the number of joints varies from two in *Ædes* to four in *Anopheles*, and five in *Megarhinus*. In *Anopheles* the ♀ palpi are four-jointed, the ♂ three-jointed, but there exists in the base a small constriction, which make the ♀ appear five-jointed; in the ♂, constrictions also appear and make the palpi look six-jointed, but I (Theobald) prefer to look upon the ♀ palpi as four-jointed, and the ♂ as three-jointed, the basal joint being very much elongated, whilst in *Megarhinus* they are five-jointed in both sexes. In the ♀ *Culex* they vary from three to four (sometimes, owing to the constriction, five), in the ♂ three-jointed (five or six-jointed if we take the constrictions as representing articulations). The antennæ are plumose in the ♂, pilose in the ♀, fourteen-jointed in the ♀, fifteen-jointed in the ♂; the basal joint is globose, and may be nude or scaly; the second joint may

be swollen, elongated, or normal, and is usually more or less scaly; in the ♂ the last two joints are long and thin except in *Ædeomyia*.

The thorax is chiefly composed of the mid-division, the mesothorax, which is large and convex; the prothorax is reduced to a pair of lobes—the prothoracic lobes—on each side of the mesothorax, between the head and the mesothorax.

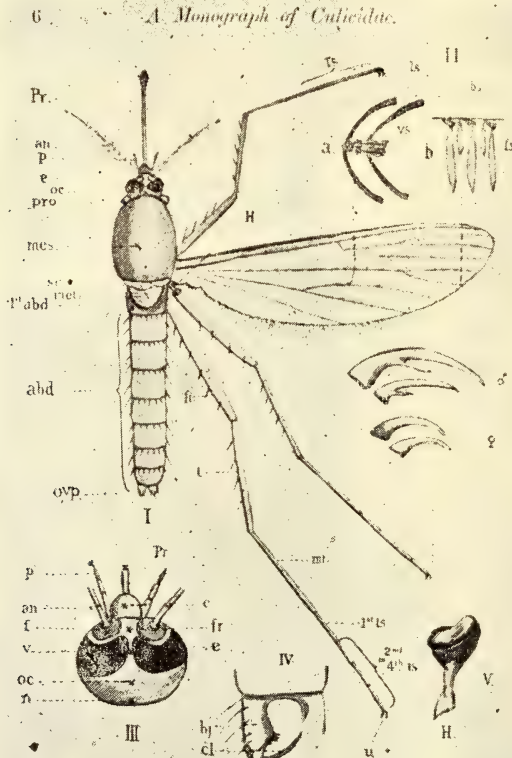


Fig. 7.

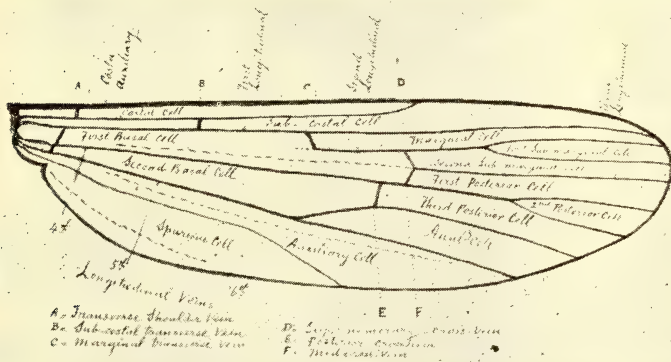
Anatomy of a typical *Culex*.

I. Pr., proboscis; an., antennae; p., palpi; e., eyes; oc., occiput; pro., prothoracic lobes; mes., mesothorax; sc., scutellum; met., metathorax; 1st abd., first abdominal segment; abd., abdomen; ovp., basal lobes of ♀; H., haltere; fr., femur; t., tibia; int., metatarsus; 1st ts., first tarsal; Ts., tarsi; u., ungues. II. Wing scales: a., of veins; b., of fringe; vs., median scales; ls., lateral scales; ba., border scales; fr., fringe scales. III. Enlarged head of ♀: Pr., proboscis; p., palpi; an., antennae; fr., basal lobe of antenna; fr., frons; oc., occiput; e., clypeus; e., eyes; n., nose; v., vertex. IV. Male genitalia: bf., basal lobe; cl., clasper. V. Haltere (II).

(Reproduced by permission of the Trustees of the British Museum.)

The scutellum is very distinct, and may be composed of a median and lateral lobes, with a posterior border of bristles, or of a single lobe. The metanotum is well developed in all save *Megarhinus* and *Toxorhynchites*, where it is more or less hidden under the scutellum; it bears neither scales nor bristles,

except in *Wyeomyia* and *Trichoprosopon*. The thoracic scales vary in the different groups; they are present on all parts save the metathorax (except *Trichoprosopon*), and may be neither flat, narrow, and curved or spindle-shaped. The abdomen joins the thorax closely, the first segment generally being more or less nude, but showing one or two patches of scales and numerous long hairs; the segments number nine, and may (*Culex*, *Megarhinus*) or may not (some *Anopheles*) be covered with broad or other scales, more or less hairy, especially in the ♂; male genitalia consists of a pair of large basal joints covered with scales and a thin nude terminal joint or clasper to each, which may be two-jointed; in the female the two anal lobes end in round, bristly, or scaly spatulate extremities. Wings with the veins covered and edged with scales of various forms,



the membranous surfaces sometimes being hairy; the scales may be spread uniformly (*Culex pipiens*, etc.) or in groups, thus giving a spotted appearance to the wings (*C. annulatus*), etc.) or the wings may be coloured on the membrane (*Mucidus mucidus*, etc.)

There is always a border-fringe of scales, which vary in form and arrangement; the costa is usually dark, and may be spotted (*Anopheles*); the auxiliary or sub-costal vein joins the costa considerably before the apex of the wing, the first longitudinal near the apex; the second and fourth longitudinals are both forked, the forks forming the first sub-marginal and second posterior cells respectively; these cells may be either long and thin (*Culex*, etc.), or very short (*Megarhinus*); the third longitudinal vein is simple, and is united to the second and fourth by the supernumerary and mid-cross veins respectively; the fifth long vein gives off an anterior branch at about half its length, forming a large anal cell, the anterior branch being

united to the fourth long vein by the posterior cross-vein; the sixth long vein is simple and sinuous; the second and third long veins may be prolonged into the first basal cell, which is usually large, but smaller in *Megarhinus*; the sub-costal transverse is always present, but not always readily seen, whilst the second long vein is united to the first by the marginal transverse; there are one (*Culex*) or two (*Megarhinus*) indistinct incrassations of the wing membrane representing branches of the fourth trunk, which never reach the margin of the wing, and are never provided with scales; in the ♂'s the fork cells are usually much smaller than in the ♀'s (especially in *Culex* and *Anopheles*); the wings are recumbent in repose, and may or may not be longer than the abdomen.

The legs are long, but not so long as in the *Tipulidæ*, the hind metatarsus being usually long; the unguis are nearly always equal and small in the ♀, and may or may not be toothed; in the ♂ the fore and mid-ungues are unequal and are toothed in various ways, but have rarely more than two serrations; the hind ones are always equal; the legs are scaly, except the coxæ and trochanters, which are usually nude, but with occasional patches of squamæ. The chief characters by which the *Culicidæ* are distinguished are:—

- (1) The piercing mouth;
- (2) The scaled veins, head, thorax, body, etc.
- (3) The venation composed of six distinct longitudinal veins (in *Heptaphlebomyia* seven), and two prominent fork-cells, with their covering of scales, the costal vein being carried right round the edge of the wing.

The family is divided by Theobald into ten sub-families, characterised as follows:—

#### SUB-FAMILY 1 —ANOPHELINÆ.

In this sub-family the scutellum is simple, never trilobed; the palpi are long in the ♂ and ♀, and the larvæ have no respiratory siphon. The head never has flat lateral scales.

The genera may easily be told by the squamose characters of head, thorax, abdomen and wings. It contains the following genera:—*Anopheles*, *Myzomyia*, *Cycloleppipteron*, *Feltinella*, *Stethomyia*, *Pyretophorus*, *Myzorhynchella*, *Arribalzagia*, *Myzorhynchus*, *Chrystia*, *Lophoscelomyia*, *Nyssorhynchus*, *Cellia*, *Neocellia*, *Aldrichia*, *Kerteszia*, *Bironella*, *Chagasia*, *Pseudomyzomyia*.

#### SUB-FAMILY 2.—MEGARHININÆ.

In this sub-family the proboscis is strongly re-curved; head and scutellum densely clothed with flat scales. The palpi of the ♀ may be short or long. The first sub-marginal cell is very small. It contains the genera *Megarhinus*, *Ankylorhynchus*, *Toxorhynchites*.



## SUB-FAMILY 3.—CULICINÆ.

Proboscis straight; metanotum nude; palpi long in the ♂, short in ♀. Antennæ of ♂ plumose; second segment normal. First sub-marginal cell as long or longer than the second posterior cell. Wings with six-scaled longitudinal veins.

It contains the genera *Janthinosoma*, *Psorophora*, *Mucidus*, *Eretmapodites*, *Quasistegomyia*, *Desvoidea*, *Stegomyia*, *Pseudoskusea*, *Ludlowia*, *Scutomyia*, *Ædimorphus*, *Leicesteria*, *Macleaya*, *Carrollia*, *Popea*, *Howardina*, *Hulecœteomyia*, *Phagomyia*, *Polyleptiomyia*, *Neomacleaya*, *Pseudohowardina*, *Lepidotomyia*, *Protomacleaya*, *Reedomyia*, *Pecomomyia*, *Catageiomyia*, *Gilesia*, *Trichorhynchus*, *Pseudotheobaldia*, *Maillotia*, *Theobaldia*, *Pardomyia*, *Megaculex*, *Grabhamia*, *Pseudograbhamia*, *Acartomyia*, *Lutzia*, *Culicada*, *Culicelsa*, *Culiseta*, *Culex*, *Microculex*, *Protoculex*, *Lophoceraomyia*, *Aporoculex*, *Leucomyia*, *Trichopronomyia*, *Tæniorhynchus*, *Chryscoonops*, *Mansonina*, *Mansonioides*, *Etorleptiomyia*, *Melanoconion*, *Neomelanoconion*, *Lasioconops*, *Finlaya*, *Oculeomyia*, *Rachionotomyia*, *Lepidoplatys*, *Gymnometopa*, *Orthopodomyia*, *Bancroftia*, *Pneumaculex*, *Danielsia*, *Culiciomyia*, *Banksinella*.

## SUB-FAMILY 4.—ÆDINÆ.

Proboscis straight; metanotum nude; palpi short in the ♂ and ♀. Antennæ of ♂ plumose, ♀ pilose. Wings with six longitudinal scaled veins. First sub-marginal cell as long or longer than the second posterior cell.

It contains the genera *Ædes*, *Skusea*, *Loptosomatomyia*, *Hæmagogus*, *Cacomyia*, *Gualteria*, *Ædeomyia*.

## SUB-FAMILY 5.—URANOTÆNINÆ.

First sub-marginal cell very small, always smaller than the second posterior cell. Proboscis straight, swollen apically. Palpi short in ♂ and ♀. Antennæ plumose in ♂, pilose in ♀. Second segment of antennæ normal.

It contains the genera *Uranotænia*, *Pseudouranotænia*, *Anisocheleomyia*, *Mimomyia*.

## SUB-FAMILY 6.—DEINOCERATINÆ.

Proboscis straight; metanotum nude. First sub-marginal cell longer than the second posterior. Antennæ pilose in ♂ and ♀. Palpi short in ♂ and ♀. Second segment of antennæ very long. Wings with six longitudinal scaled veins.

It contains the genus *Deinocerites*.

## SUB-FAMILY 7.—HEPTAPHLEBOMYINÆ.

Proboscis straight; metanotum nude. First sub-marginal cell long. Antennæ pilose in ♀, plumose in ♂. Wings with

seven longitudinal scaled veins. Palpi short in ♀, long in ♂.

It contains the genera *Heptaphlebomyia*, *Pseudoheptaphlebomyia*.

#### SUB-FAMILY 8.—TRICHOPROSOPONINÆ.

Proboscis straight; metanotum with squamæ or chætæ. Palpi long in ♂, short in ♀. First sub-marginal cell longer than the second posterior cell.

It contains the genera *Runchomyia*, *Hyloconops*, *Trichoprosopon*, *Joblotia*.

#### SUB-FAMILY 9.—DENDROMYINÆ.

Proboscis straight; metanotum with chætæ or squamæ. Palpi short in both sexes. First sub-marginal cell longer than the second posterior cell.

It contains the genera *Wyeomyia*, *Phoniomyia*, *Dendromyia*, *Philodendromyia*, *Polylepidomyia*, *Sabethes*, *Sabethoides*, *Sabethinus*.

#### SUB-FAMILY 10 —LIMATINÆ.

Proboscis elbowed. Metanotum squamose. Palpi short in ♂ and ♀. First sub-marginal cell longer than the second posterior cell.

It contains the genus *Limatus*

## TABLE OF SUB-FAMILIES.

- A. Scutellum simple, never trilobed ; proboscis straight ;  
palpi long in both sexes. *Anophelinæ.*
- AA. Scutellum trilobed.
- a. Proboscis strongly recurved ; first sub-marginal  
cell very small. *Megarhininæ.*
- aa. Proboscis straight ; metanotum nude.
- b. Wings with six long veins.
- c. Antennæ with second joint normal in length.
- d. First sub-marginal cell as long or longer than the  
second posterior cell.
- e. Palpi of female shorter than the proboscis ; palpi  
of male long. *Culicinæ.*
- ee. Palpi short in both sexes. *Ædinæ.*
- dd. First sub-marginal cell very small, smaller than the  
second posterior cell. *Uranotæninæ.*
- cc. Antennæ with second joint very long. *Deinoceratinæ.*
- bb. Wings with seven long veins *Heptaphlebomyinæ.*
- aaa. Proboscis straight ; metanotum with scales or chætæ.
- f. Palpi long in male, short in female. *Trichoprosoponinæ.*
- ff. Palpi short in both sexes. *Dendromylinæ.*
- aaaa. Proboscis elbowed. *Limatinæ.*

Mosquitoes are classified by the microscopical character of their scales, particularly those of the occiput and wing. In order to examine a mosquito effectively under the microscope, it should be mounted in a particular way, and the following method introduced by the writer, is recommended. Mosquitoes are captured alive in the glass-bottomed boxes used by entomologists and brought home alive ; after having been killed in the cyanide bottle, they are emptied out on to what the writer has termed "the paper drum" (this is a hollow cylinder of cardboard or any other material, about two inches in diameter, and a couple in length, over one end of which is stretched a piece of writing paper, and tied on). The pins used for rare specimens and all intended for types are silver pins ; there are several thicknesses of these, and it is well to have a few of each ; when using silver pins it is necessary to employ polyporus strips: for ordinary work, however, No. 20 gilt pins and strips of cork, one-eighth inch square, and half-an-inch long, are used ; the pin is held with a pair of entomologist's forceps, and passed through the polyporus or cork strip one-sixteenth of an inch from the end until the middle of the pin is in the cork ; the cork being held by the finger and thumb, the pin is passed through the mosquito's thorax, and pushed on through the paper drum until the insect almost touches the cork ; a large pin is then stuck into the other end of the cork, one-eighth inch from the end, and pressed on until the cork is midway up, a No. 5 black steel pin or a No. 3 white (Kirby, Beard and Co.,) is recommended for this purpose ; the specimen is afterwards handled by the larger pin only.

When examining a mosquito mounted in this way, the large pin is stuck into the side of a cork, one inch in diameter, and three-quarters long, half a wine cork answers the purpose ; by shifting the cork about on the stage of the microscope, and by varying the angle at which the specimen is pinned, the mosquito can be brought into any position for examination by low powers ; a magnification of about fifty diameters will generally suffice. It is well to remember that the scales of mosquitoes are easily rubbed off ; the specimen after having been killed in the cyanide bottle, should be pinned immediately ; pin through the thorax in the most convenient way ; do not roll the specimen over, and never set out the wings or legs, for every touch, even with a fine pin, removes more or less of the scales.

Professor E. P. Felt has recently split up the genus *Culex* into a number of new genera on the character of the male genitalia and venation. He proposes to divide the old genus into *Culex*, *Culicelsa*, *Culicada*, *Ecculex*, *Culicella*, *Culiseta* and *Protoculex*. It seems a pity that dipterists do not give Theobald a free hand to arrange the Culicidæ, as he is in a better position than anyone

else to do this most difficult work ; to adopt any other than his classification now would cause endless confusion.

In critically examining the venation, *e.g.*, the position and relative size of the cross-veins, the wing should be mounted in a drop of olive or castor oil, on a slide with a cover glass ; all the cross-veins are then seen to advantage ; with an eye piece micrometer their size can be determined.



## TABLE OF SPECIES.

## SUB-FAMILY ANOPHELINÆ.

- Anopheles corethroides*.—*Theobald*.  
*Pyretophorus atratipes*.—*Skuse*.  
*Myzorhynchus bancroftii*.—*Giles*.  
*Nyssorhynchus annulipes*.—*Walker*. . . . . "Spear Mosquito."

## SUB-FAMILY MEGARHININÆ.

- Toxorhynchites speciosus*.—*Skuse*.

## SUB-FAMILY CULICINÆ.

- Mucidus alternans*.—*Westwood*. . . . . "Scotch Grey."  
*Stegomyia fasciata*.—*Fabricius*. . . . . "Tiger Mosquito."  
*Stegomyia punctolateralis*.—*Theobald*.  
*Pseudoskusea multiplex*.—*Theobald*.  
*Scutomyia notoscripta*.—*Skuse*.  
*Macleaya tremula*.—*Theobald*.  
*Gilesia aculeata*.—*Theobald*.  
*Grabhamia flavifrons*.—*Skuse*.  
*Culex fatigans*.—*Wiedemann*. . . . . "House Mosquito."  
*Culex vittiger*.—*Skuse*.  
*Culex alboannulatus*.—*Macquart*.  
*Culex rubithorax*.—*Macquart*.  
*Culex tigripes*.—*Grandpré* . . . . . "Long-lived Mosquito."  
*Culex occidentalis*.—*Skuse*.  
*Culex vigilax*.—*Skuse*. . . . . "Black Bush-Mosquito."  
*Culex annulirostris*.—*Skuse*.  
*Culex pseudomelanoconia*.—*Theobald*.  
*Culex burpengaryensis*.—*Theobald*.  
*Culex procax*.—*Skuse*.  
*Culex cylindricus*.—*Theobald*.  
*Culex linealis*.—*Skuse*.  
*Tæniorhynchus acer*.—*Walker* . . . . . "Golden Mosquito."  
*Mansonia uniformis*.—*Theobald*.  
*Finlaya poicilia*.—*Theobald*.

## SUB-FAMILY ÆDINÆ.

- Skusea funerea*.—*Theobald*.

## SUB-FAMILY URANOTÆNINÆ.


- Uranotænia pygmæa*.—*Theobald*.  
*Anisocheleomyia nivipes*.—*Theobald*.

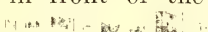
## ANOPHELES.—MEIGEN (1818).

Thorax and abdomen clothed with hair-like curved scales, practically hairs; the palpi of the female thin, not densely scaled, generally unbanded. Wing veins covered with long lanceolate scales, which may or may not form spots, but which, if present, are never so numerous as in other genera. They are mostly large species, and either belong to temperate climates, or are hill species when occurring in tropical climates.

ANOPHELES CORETHROIDES.—*Theobald* (1907).

♀. Head brown, with grey sheen, and with narrow upright paler brown to dull ochreous, forked scales; clypeus large, deep brown, with grey sheen; antennæ deep brown with pale pubescence along the internodes; proboscis deep brown; palpi deep brown, not quite as long as the proboscis, apical segment much shorter than the long penultimate segment. Thorax pale greyish-brown with a broad dark brown median area extending from the head to about half the length of the mesonotum, broadest in front, and with a median line, and ending in two separate rounded outlines; just overlapping and passing back to the scutellum, on each side is a pale brown line; hairs brown, a median line somewhat paler; scutellum pale ochreous grey with brown border-bristles; metanotum deep brown; pleuræ brown. Abdomen deep brown, paler areas on the last few segments, bristles brown and pale brown. Legs brown with bronzy reflections, paler beneath, unguis equal and simple. Wings with rather short fork-cells, the first sub-marginal longer and narrower than the second posterior contracted apically; its base nearer the base of the wing, its stem about two-thirds the length of the cell; stem of the second posterior as long as the cell; mid cross-vein about its own length in front of the supernumerary and posterior cross-veins. Halteres with dark knobs. Length, 3 to 4 mm.

♂. Palpi deep brown swollen apically with scanty hairs, slightly longer than the proboscis; fore unguis unequal, the larger uniserrate; mid and hind equal and simple. 

First sub-marginal cell longer and narrower than the second posterior cell, its stem as long as the cell, stem of the second posterior longer than the cell; mid cross-vein rather more than its own length in front of the supernumerary and posterior. Length, 3 mm. 

This is a small mosquito, and extremely uncommon; I bred it out from a mixed lot of larvæ obtained from a small well or water hole, four feet square, made in a gully in the Burpengary scrub, near the railway station; this hole was dug out with a spade until water soaked naturally into it; several rare mosquitoes were obtained from this waterhole. After some months, predacious insects such as Dragon-fly larvæ, Notonecta, Belostoma,

etc., make their appearance in such a mosquito well, and if one wishes to encourage mosquitoes to breed in it, it is necessary to clean it out occasionally.

I have also bred it out from mixed larvæ obtained from the Kedron Brook, in the vicinity of Alderley.

Mosquitoes have a hard existence in permanent water courses, as these are stocked with small fish, and a large variety of insects; their safest position is at the extreme edge, where the water is an inch or less deep.

The eggs and larvæ have yet to be observed, and whether the mosquito bites; hitherto only a few specimens have been obtained, and all have been pinned for identification.

#### PYRETOPHORUS.—BLANCHARD (1902).

Thorax with narrow-curved scales, often rather elongated; abdomen with hair-like curved scales, practically hairs, the ♀ lamellæ only with scales; wings with small, short, lanceolate or narrowish scales, much spotted as a rule; palpi of the ♀ moderately scaled; legs banded, sometimes spotted. No flat scales on the head.

#### PYRETOPHORUS ATRATIPES.—Skuse (1888).

♀. Antennæ about three-fourths the length of the palpi; dark brown almost fuliginous, with hoary pubescence and verticils; first joint of the scapus black. Head fuliginous, adorned with white scales, intermixed with some black hairs, and a tuft of long white parallel hairs stretching out from the vertex over the bases of the antennæ. Proboscis and palpi densely and uniformly clothed with deep violet-black scales, the terminal joint of the latter very slightly tipped with white. Thorax primrose-brown, with a small roundish black spot laterally about the middle of its length, and another immediately in front of the scutellum, traversed by three long, parallel double rows of moderately long black hairs intermixed with short slender shining white scales; lateral margins slightly testaceous with a few scattered white scales and some short white hairs above and in front of the origin of the wings; pleuræ dark brown, somewhat marbled with testaceous; scutellum testaceous, with a dark roundish spot on the apex, fringed with long black hairs, metanotum brown, halteres black, or very deep brown, the stem ochre-yellow. Abdomen about twice length of thorax, black, levigate, sparsely clothed with golden-yellow hairs (terminal joint more densely); lamellæ of ovipositor black, fringed with short golden-yellow hairs. Coxæ ochreous. Legs clothed with violet-black scales, femora and tibiæ bright ochreous beneath and very slightly at the tips. Coxæ pale ochreous without scales, slightly hairy. Wings length of the entire body, bright ochre-yellow at base, hyaline, veins very densely covered with scales, those on the costa, auxiliary and first longitudinal veins black,

the remaining veins with black and yellow scales arranged in alternate series, almost entirely black on the sixth long vein. Six patches of black scales are prominent, situated at the following points; on the fifth long vein, midway between its origin and the base of its fork, at the base of the fork, at the bases of the second and third long veins, the cilia on the costa between a point immediately above the tip of the first long vein and immediately below the tip of the third long vein pale yellowish or whitish, the remaining cilia violet-black with a light sericeous reflection. Auxiliary vein reaching the costa opposite the middle cross-vein, second long vein beginning some distance before the marginal cross-vein; supernumerary and middle cross-vein opposite one another, situated beyond the posterior cross-vein a distance not equal to the length of the latter; posterior cross-vein situated opposite the beginning of the third long vein and considerably beyond the tip of the sixth long vein; first sub-marginal cell longer but not narrower than the second posterior cell, its base situated a little before that of the latter; base of the anal cell lying a little before origin of second long vein.

Length of antennæ, 1.77 mm.

Wing expanse,  $4.18 \times 0.84$  mm.

Body,  $4.18 \times 0.76$  mm.

Habitat, Berowra (N.S.W.) (Skuse); South Queensland (Bancroft.)

Theobald adds these details after examination of the specimens from Queensland: Clypeus trilobed. The densely scaled palpi are scarcely white at the apex, and the scutellum has rather long pale scales on the posterior border and fifteen border-bristles rather far apart.

The authorities in Sydney, who have charge of Skuse's collection of mosquitoes and his types, fearing lest the insects might be damaged in transit, refused to forward the same to the British Museum; Mr. Theobald had to work out the Australian mosquitoes without the assistance of this excellent collection.

This mosquito is rather uncommon, only two or three specimens can be obtained occasionally in scrubs and swamps in South Queensland, from Caboolture to Moreton Bay and Enoggera. It is a vicious biter, causing considerable pain; it may be told at a glance from *Nyssorhynchus annulipes*, the common Spear mosquito, by the unbanded legs and black palpi. It will live in confinement and oviposit; eggs laid singly; the larvæ are delicate and hitherto I have not succeeded in rearing any to maturity. Males not known

#### MYZORHYNCHUS —BLANCHARD (1902).

Thorax with hair-like scales; prothoracic lobes with ragged scales; the abdomen with ventral and a few apical scales, and a ventral apical tuft; there are no lateral scale tufts to the segments; wing scales broadly lanceolate or moderately lanceolate,



sometimes short and broad; palpi densely scaled in the ♀ and also the proboscis. Wild species breeding in swampy ground. Larvæ with much branched frontal hairs. Mostly large and dark species.

MYZORHYNCHUS BANCROFTII.—*Giles* (1902).

♀. Head black, with dark narrow curved and forked upright scales; antennæ, palpi, and proboscis deep black, the two latter densely scaled; thorax black, with rather dense, long, golden brown hairs; pleuræ mottled, with black and pale brown. Abdomen black, with golden brown hairs; venter black. Wings deep black, with a small white interruption of the costa opposite the middle of the fork-stems and a slightly larger patch of white at the apex; veins dusky and white scaled, the former predominating; two prominent white areas on the sixth long vein, on the other veins are here and there scattered white scales, but never enough to form a well marked pale area; fringe with pale areas where the veins join the costa, except at the end of the sixth. Legs black, the tarsi with very small apical pale bands. Length, 7 mm.

I found this large black mosquito in scrubs from Caboolture to Enoggera, biting fiercely; it is never plentiful; it can be told immediately it settles on you from its dark colour and dark black shaggy palpi; I allowed several to bite me before boxing them, and kept them in confinement in hope that they would oviposit; they, however, died in a day or two.

The eggs and larvæ and males have never been seen.

NYSSORHYNCHUS.—*BLANCHARD* (1902).

Thorax with narrow-curved and spindle-shaped scales. Abdomen with ventral scales and also scales on the apical segment and sometimes dorsal apical patches. Wing scales bluntly lanceolate, short, some more elongate and narrow; palpi densely scaled. Legs banded and spotted with white, the hind tarsi usually with one or more pure white joints.

The larvæ are mostly pot and puddle-breeding species, but some breed in marshes; the adults mostly domestic, but some are wild.

The scales on the abdomen vary; some are small and spatulate, others long and thin; some have a fair number of abdominal scales, others only on the apical segment; they are never as prominently scaled as *Cellia*, nor are the wing scales similar.

NYSSORHYNCHUS ANNULIPES.—*Walker* (1850).

♂. Head black, with white scales in front and dusky scales behind; eyes dark; antennæ dark brown, with band of white scales and pale hairs; palpi slender and long, with white and brown bands; proboscis slender, covered with small dark scales



slightly longer than the palpi. Thorax dark brown, almost black when denuded, with slaty reflections, indistinctly striped and with pale scales dotted over it; scutellum paler towards the edge; metanotum deep shiny black; pleuræ blackish. Abdomen dark brown, paler towards the edge, with yellow scales scattered over it, particularly at the pale edges, black ventrally. Femora and tibiæ with numerous bands of black and yellowish-white scales, tarsi with pale bands both apical and basal. Wings with four black spots along the costa and with numerous small patches of dark scales on the veins. Halteres testaceous at the base, with a pale stem and dark knob. Length, 5 mm.

♀. Head black, with white scales on the vertex, black scales at the sides; two long tufts of white hairs projecting in front; antennæ brown, with white pubescence; basal joints testaceous, first two joints with white scales. Proboscis brown; palpi with the last three joints with a broad white apical ring, the first and second joints with white patches of scales above. Thorax brown, with slaty-grey reflections, and with scattered white and creamy scales; scutellum yellowish at the sides, fuscous in the middle. Metanotum dusky. Abdomen fuscous, with dull yellow scales. Legs as in the ♂. In the wings the first sub-marginal cell is considerably longer and narrower than the second posterior cell, its base nearer the base of the wing than that of the latter; the posterior cross-vein more than its length from the mid cross-vein.

Length, 5 to 6 mm.

Habitat, N. S. Wales (*Skuse and Masters*); S. Queensland (*Bancroft*).

Theobald describes the larvæ as follows:—There are two curved median frontal hairs; then two long simple ones; and two lateral tufted ones, and the antennæ are serrated along one side, the apex with two spines and two median hairs.

This is the common Anopheline or Spear-Mosquito, plentiful all the year round in Southern Queensland in forest as well as scrub country, and even coming into the houses. It will bite at any time, and possibly is the mosquito associated with malarial fever, in Southern Queensland, at any rate. The eggs are laid singly, and the larvæ float horizontally on the surface of the water; they live in salt water as well as in running fresh and stagnant waters; but they are to be found about habitations in small collections of water, also, but not commonly. The larvæ present many different appearances, some being quite black, whilst others are brown with white spots.

This mosquito will live in confinement for about a month if fed on dates, and will oviposit whilst caged.

The mosquitoes hatched from larvæ, that have been starved, are very small in size, and it is a question whether these are not what *Skuse*, and after him, *Theobald*, regarded as *Nyssorhynchus masteri*. *Theobald*, in his description of *Nyssorhynchus masteri*, *Skuse*, from small specimens from Queensland, makes these

observations: "Very like and closely related to *N. annulipes*, but the female can easily be told by the proboscis being paler at the tip. It is also smaller in size, and Skuse says that the subcostal transverse vein is placed considerably beyond the middle of the auxiliary vein, whilst in *N. annulipes* it is situated in the middle."

These characters, however, I find will not hold with the Queensland specimens.

#### TOXORHYNCHITES.—THEOBALD (1901).

Head clothed with flat scales; thorax with small, flat, spindle-shaped scales; abdomen with flat scales. Palpi short in the ♀ three-jointed, the last joint long and rounded at the end, slightly curved at the apex; long in the ♂ five-jointed; proboscis long and curved, as in *Megarhinus*; wing venation much as in *Megarhinus*, the supernumerary cross-vein nearer the apex of the wing than the mid cross-vein; unguis of ♀ equal and simple. Abdomen with a caudal tuft. In *Megarhinus* the palpi are long in both sexes

#### TOXORHYNCHITES SPECIOSUS.—Skuse (1888).

♂. Antennæ brown, a little more than half the length of the palpi; basal joint black, with hoary reflections; second joint more than twice the length of the third, ornamented with some beautifully iridescent scales, the whorl of very long hairs situated about one-third from the apex. Head covered with brilliant margaritaceous scales, chiefly reflecting green; in a certain light appearing brown with a bright pale greenish line round the hinder border of the eyes. Proboscis (0.300in.) somewhat longer than the palpi (0.285in.), deep metallic blue, with a purplish reflection before the bend, brown beyond. Palpi deep metallic blue, with purplish reflections, the third joint ringed with golden-yellow at the apex (this is much more distinct underneath), and the fourth joint with a broader ring of the same beyond the middle. Thorax brown, the lateral margins and prothorax densely covered with pale greenish scales, the latter with long brown hairs; hinder margin and scutellum richly adorned with brilliantly iridescent scales and long brown hairs; pleuræ with a naked brown stripe from the origin of the wings to the scale-like prothoracic projection, below this densely covered with silvery scales; metanotum brown, naked. Halteres ochre-yellow. Abdomen about twice the length of, but narrower than the thorax, flat, deep metallic blue, except the first segment, the latter green with a yellow patch on each side; fifth segment showing some golden-yellow laterally, sixth and eighth segments ornamented with a strong tuft of golden hair laterally, the seventh with black tufts; all the segments slightly bordered with golden hairs laterally; the first to third and fifth to seventh segments golden-yellow beneath with a metallic blue longitudinal stripe down the centre, fourth entirely

metallic blue, and the terminal one brilliant pale green. Coxæ clothed with silvery scales. Femora and tibiæ metallic violet, the former golden-yellow beneath. In the intermediate and fore legs the first joint of the tarsi white except at the base, and the second also except at the apex; the rest metallic violet. Wings longer than the abdomen, with a pale brownish tint anteriorly and along the fifth longitudinal vein, veins pale brown, cilia pale and short, weak reflections. Auxiliary vein joining the costa almost opposite but somewhat beyond the posterior branch of the fifth longitudinal; sub-costal cross-vein distinct, situated about mid-way between the origin of the anterior branch of the fifth longitudinal vein and the origin of the second longitudinal; fork of the latter very small, the tips of the branches slightly bent anteriorly; supernumerary cross-vein equal in length to the middle cross-vein; posterior cross-vein more than twice the length of the latter, rather sinuose, tip of the anterior branch of the fifth longitudinal vein joining the margin opposite the middle of the second posterior cell, a very prominent wing-fold running close to the posterior side of the fifth longitudinal for the whole of its length, and another on the anterior side in the anal cell.

Skuse's description was made from damaged specimens. Theobald adds the following:—The fore legs have the femora and tibiæ deep violet and blue, the metatarsus white, except just at the base, the first tarsal all white, the second, third, and fourth dark brown, a trace of white at the base beneath the second joint; in the mid legs the femora are steel-blue, green and violet, golden beneath; tibiæ yellow scaled, black at the apex and base, the metatarsi with a broad white basal band, metallic black apically, first and second tarsal joints white, third and fourth small, the latter brown, the former brown with a white basal band; in the hind legs the femora are metallic black, blue, violet and golden beneath; tibiæ very metallic purple, with a golden-yellow band in the middle; metatarsus brilliant purple, base with a narrow white band; first tarsal entirely white except just at the apex, last three joints dark metallic purple. Ungues of the female all equal and simple; in the male they are all unequal, the larger one with a tooth, which is shorter and blunter on the hind pair; the small unguis simple.

♂. Length of antennæ, 4.06 mm.

Expanse of wings,  $8.39 \times 1.54$

Size of body,  $11.17 \times 2.02$ .

This magnificent insect has a wide range, having been taken originally by Masters at Port Denison; at Thursday Island by Mrs. Eyre; at North Percy Island by Mr. Tryon; and by myself in many scrubs from Caboolture to Moreton Bay and Enoggera.

It is not a biting mosquito; to obtain good specimens it is advisable to hatch out the larvæ, which may be found in scrubs in crevices in trees holding a pint or so of water; the larvæ are



red in colour, very large and voracious, devouring other mosquito larvæ found in similar situations, *e.g.*, those of *Scutomyia notoscripta* and *Culex occidentalis*; they are to be found occasionally in water-butts about habitations, situated near jungles or scrubs; I have obtained them in scrubs by hanging up or nailing to trees large jam tins filled with water and rotten leaves; the eggs are laid singly.

#### MUCIDUS.—THEOBALD (1901).

Head clothed with narrow-curved, forked upright, and long twisted scales. Thorax with narrow-curved scales and long twisted apically expanded scales as on the head. Abdomen with dense scales, which stand out, and give it a ragged appearance. Wings covered with broad pyriform scales, many of which are parti-coloured. Palpi of the female half as long as the proboscis; antennæ of the female fourteen-jointed including the basal joint; of the male fifteen-jointed; palpi of the male five-jointed, a little longer than the proboscis. Wings with the venation much as in *Culex*, but the posterior cross-vein is nearer the apex of the wing than the mid cross-vein. Legs banded, densely scaled with projecting scales; fore and mid unguis of the male unequal, the larger with two, the smaller with one tooth; hind unguis equal, small, toothed; in the female all the unguis are small, equal, thick, and with a short thick tooth.

The members of this genus are large species, and present a curious mouldy appearance.

#### MUCIDUS ALTERNANS.—Westwood (1835).

♀. Head brown, with a patch of white scales in the middle and on each side, a pure white edge to the eyes, ochraceous scales between the white patches, and two tufts of yellow hairs projecting forwards; eyes black, purple in some lights; antennæ ochraceous, bases at the joints dark, basal joint bright ferruginous, with a few white scales, verticillate hairs brown; proboscis broad, bright ochraceous yellow, with numerous black scales at the tip and others at the base; palpi covered with parti-coloured ochraceous and deep purple scales and pure white ones, the dark colour predominating at the basal parts, the yellow in the middle, and the white scales at the tip. Thorax densely clothed with yellowish-brown, curved scales and white spots, formed by groups of pure white scales, longer and broader than the rest, a median and two lateral rows of bristles, and numerous dark bristles at the sides, the white spots are as follows: three in front against the head, three very clear ones in the middle, and broken masses of white scales at the sides, and another small patch just in front of the scutellum; scutellum ochraceous brown, with white scales; metanotum brown; pleuræ darker brown, with numerous white scales. Abdomen deep purplish-black to brilliant purple, depending on the light, covered with bright ochraceous yellow, white and

parti-coloured scales, the white scales forming more or less basal bands, and a white median spot to each segment, especially posteriorly ; each segment has also an apical border of pale hairs ; first segment nude, with only a patch of white scales in the middle, and numerous fine pale hairs ; the white scales at the bases of the abdominal segments spread out laterally and form distinct lateral spots ; on the venter the abdomen is broadly, basally banded with white scales, the parti-coloured ones forming only narrow apical borders. Legs thickly clothed with ochraceous, parti-coloured, and white scales, which stand up from the surface more than usual, all the joints banded ; fore femora not very distinctly banded ; tibiæ with three white bands, metatarsus with two, the first two tarsal joints with basal white bands, last two unbanded ; in the mid legs the femora are white at the apex, and have one distinct white band and two white patches below, not forming bands ; tibiæ and tarsi as in the fore legs ; in the hind legs the tarsi are all basally white. Ungues thick, short, uniserrated ; the ungues, which are equal on all the legs, have spines on their sides. Wings with the veins densely covered with large parti-coloured and yellow and white scales, the fringe alternately black and white ; the majority of the scales are half purple and half yellowish-brown, but on the costa and first longitudinal, just over the base of the fork-cell, the scales are plain yellowish-white, forming a distinct spot ; there are also white scales forming spots at the base of the fork-cells, on their stems, a dusky spot over the cross-veins and at the base of the second long vein, where it joins the first ; posterior cross-vein a short distance in front of the mid cross-vein and much longer ; first sub-marginal cell longer and narrower than the second posterior cell, their bases about level and their stems, which are white scaled, shorter than the cells and nearly equal in length. The surface covered with very minute bristles. Halteres ochraceous.

Length, 7.5 to 8 mm.

♂. Head with white and ochraceous scales and long yellow hairs, border of the eyes white scaled. Antennæ ochraceous, with narrow darker rings, plume hairs black at the base on the inside, the remainder silky, ochraceous ; apical joints dark ; palpi with ochraceous ground colour, the first two joints and ends of remaining joints covered with dark scales, the bases white scaled, hairs silky ochraceous and brown ; proboscis yellow, with black apex and black scales on the base. Thorax with curved yellowish, and numerous long white scales, giving it a frosty and mouldy appearance ; the yellow scales are especially noticeable as a large patch at the sides in front and as a median stripe, and also again at the back of the mesonotum ; scutellum clothed with white scales ; metanotum brownish yellow. Abdomen much as in the female, but with more frosty-white scales ; claspers yellowish. Legs as in the female, but the scales are longer, and stand out more from the surface. Front and mid



ungues unequal, the large one with two teeth, the smaller with only one tooth; in the hind claws both are equal, small, and with a single tooth.

Length, 7.5 mm.

Habitat, N. S. Wales (*Skuse*); Natal (*Walker*); Queensland (*Bancroft*).

This is the "Scotch Grey"; it is a magnificent insect under the microscope; common throughout the year all over Queensland, but especially along the coast, and extending into N.S. Wales, where it is sometimes called "Hexham Grey." It is a vicious biter; does not live in confinement. It oviposits singly, the eggs are large, oval, black in colour, pitted and float on their side. The larvæ are to be found plentifully in salt-water swamps, especially in stagnant pools of water left by the high spring tides; when there is no salt water available this mosquito will oviposit in fresh water; the larvæ devour other larvæ, but not to a great extent.

#### STEGOMYIA.—THEOBALD (1901).

Palpi short in the ♀; long in the ♂, four-jointed in the ♀, and five-jointed in the ♂. Head clothed completely with an armour of broad flat scales; mesothorax covered with either narrow-curved or spindle-shaped scales, scutellum always with broad flat scales; abdomen completely covered with flat scales, banded or unbanded, with white lateral spots. The ♀ palpi are small, never more than one-third of the length of the proboscis; those of the ♂ are as long, or longer than the proboscis and usually nude. Wings with similar venation to a typical *Culex*, but the fork cells short.

#### STEGOMYIA FASCIATA.—*Fabricius* (1805).

♀. Head densely clothed with broad flat scales, black and grey on each side, a white patch in the middle in front extending back to the neck, a white patch on each side, a thin white border to the eyes. Clypeus covered with silvery scales; the scales at the back of the crown with an ochraceous tinge in some lights, long black bristles projecting forwards; eyes black, with silvery patches in some specimens; antennæ blackish, with narrow pale bands, basal joint black, with a patch of white scales on the inside (appearing as two small white spots with a lens), second joint sometimes pale testaceous at the base, pubescence and verticils dark brown; palpi black scaled, the last joint with pure silvery-white scales inside and on the tip, sometimes entirely white. Thorax dark brown, covered with reddish-brown, pale golden and creamy curved scales, ornamented as follows: a pure-white, broad curved band on each side, curved inwards about the middle of the mesonotum and continued back as a thinner pale line to the scutellum, two thin parallel pale scaled lines between extending about half way

across the mesonotum and more or less on the scutellum, a short white line in front between these two, a white spot on each side of the thorax in front near the neck ; scutellum with a thick row of white scales and with three tufts of bristles ; metanotum brown ; pleuræ dark brown with several patches of silvery scales. Abdomen dark brownish-black, with basal bands of white scales ; first segment densely clothed with creamy scales and edged with pale hairs ; sides with patches of white scales forming more or less flat triangular patches. Legs with the femora with the bases yellowish, dark scaled towards the apex, extreme tip pure white, ventral surface partly covered with white scales ; tibiæ black ; metatarsi with basal white bands ; fore tarsi with the first joint basally white, rest black ; mid-tarsi the same ; hind tarsi all basally white, except the last joint, which is pure white, penultimate joint mostly white with black apex ; fore and mid ungues both toothed and hind without teeth. Wings with the veins clothed with very long narrow brown scales, and short median broad dark brown ones ; first sub-marginal cell longer and but slightly narrower than the second posterior cell, base of the former a little nearer the base of the wing than the latter ; posterior cross-vein about one and a half times to twice its length distant from the mid cross-vein. Halteres ochraceous, sometimes the knob is slightly fuscous.

Length, 3.5 to 5 mm.

♂. Darker than the ♀. Head black, with white scales in front and in the middle ; antennæ brown, with paler brown bands, sometimes almost white, basal joint jet black with a large tuft of pure white scales, plumes brown ; palpi black with four white basal bands ; proboscis black ; thorax marked as in the female, but much darker, and the white scales clearer and more silvery. Abdomen with the first segment with creamy scales, bases of the second to fifth segments white, fifth to eighth with clear white lateral spots ; these spots also occur on the front segments, but quite at the sides. Legs as in the female. Fore claws unequal, the larger one with a short blunt tooth, smaller one untoothed ; mid ungues unequal, untoothed ; hind equal, untoothed.

Length, 3 to 4.5 mm.

This species is subject to very considerable variation, both in size and in colour of scales ; it is known as the "Tiger mosquito" plentiful about habitations throughout the world, in warm latitudes. It oviposits singly, the larvæ are found in association with those of *Culex fatigans* in small collections of water in or near habitations ; it is a most annoying insect, biting in the house in the day time, more particularly ; present and biting throughout the year in Brisbane ; it is an introduced species and never goes wild ; it is the intermediary host for the Yellow Fever parasite and possibly also for Dengue Fever.

STEGOMYIA PUNCTOLATERALIS.—*Theobald* (1903).

♀. Head covered with flat bronzy-brown scales, and a pale almost white, border around the eyes. Palpi, proboscis, clypeus and antennæ deep black. Palpi slightly clavate, much contracted at the base, apical segment minute. Thorax black, with bronzy-brown narrow-curved scales, paler almost grey ones behind and at the sides forming lateral pale lines, and a narrower one just over the roots of the wings; prothoracic lobes white scaled, separated from the rest of the thorax by a prominent black line; pleuræ densely white scaled; scutellum with small flat grey scales and brown border-bristles, four to the mid lobe; metanotum deep brown. Abdomen deep brown with violet reflections, in some lights under the microscope bright violet, each segment with prominent apical lateral creamy spots, which in some segments spread almost across the apical borders so as to form prominent pale lines, but they never quite meet, except in the penultimate segment; the first segment testaceous, with large dense black scales in two confluent spots, with brown bristles; border-bristles very short, pale brown, shining apically. Venter creamy-white; the apical spots are very pronounced on the ventral surface in dried specimens. Legs jet black; under surface of femora, tibiæ, and first hind tarsal silvery-white; ungues small, equal and simple. Wings with brown scales; fork-cells of moderate length, the first sub-marginal cell considerably longer and narrower than the second posterior cell, its base the nearer to the base of the wing; stem of the first sub-marginal cell more than half its length; stem of the second posterior cell nearly as long as the cell; posterior cross-vein about twice its own length distant from the mid cross-vein. Halteres with dull testaceous stem and fuscous knob.

Length, 4.5 mm.

♂. Thorax and abdomen as in the ♀, but the abdomen narrower and the apical lateral spots not quite so prominent. Basal lobes of genitalia densely bristly, bristles large, and arise from distinct papillæ; claspers long and thin, simple. Antennæ deep brown, with deep brown plume-hairs, pale banding more or less noticeable; proboscis black; palpi shorter than the proboscis, deep blackish-brown, no hair tufts, the last two segments of nearly equal length, the apical one slightly shorter and with terminal bristles. Legs as in the ♀; fore ungues unequal, the larger uniserrated, the smaller simple; mid ungues unequal, both simple; posterior ones very small, equal and simple, much curved. Wings with brown scales; the first sub-marginal cell longer and narrower than the second posterior cell, the base nearly level with that of the latter; stem of the first sub-marginal cell about one-third the length of the cell; stem of the second posterior about two-thirds the length of the cell; posterior cross-vein considerably longer than the mid and more than twice its length distant from it.



Length, 5.5 mm.

This is rather a rare species in the vicinity of Brisbane at any rate ; it is a biting mosquito, produces a shrill note altogether different from the hum of other mosquitoes. When resting the hind legs are cocked up and bent forwards. It oviposits in a long narrow raft, jet black in colour and very like that of *Culex tigripes* ; the larvæ are found occasionally in water-butts and tanks ; in appearance and habit they resemble those of *Stegomyia fasciata* and *Scutomyia notoscripta*, feeding and spending most of their time at the bottom, in contradistinction to *Culex* larvæ, which live for the greater portion of their life on the surface. They are grey in colour, with black bristles ; have a brown head, black anal joint, and short black respiratory siphon.

PSEUDOSKUSEA.—THEOBALD (1907).

Head with flat scales ; palpi short in ♀, long in ♂, very thin, no hair tufts, resembling *Desvoidea*. Scutellum with narrow-curved scales. Mid unguis of male equal in size ; a character found only in the genus.

PSEUDOSKUSEA MULTIPLEX.—*Theobald* (1903).

♀. Head covered with flat scales of a deep brown to black colour with violet reflections. ochraceous in the middle, at the sides and around the eyes, and with numerous black upright forked scales behind ; clypeus, palpi and proboscis black ; antennæ deep brown, basal joint and base of the second joint testaceous. Thorax deep testaceous brown, covered with hair-like curved bronzy black scales, a more or less irregular band of narrow curved creamy to ochraceous ones running across the mesonotum ; in some lights the scales, except the pale ones, appear quite black ; scutellum deep brown, testaceous at the base, with hair-like black and narrow-curved creamy scales, six large black posterior border-bristles to the mid-lobe ; metanotum testaceous brown ; pleuræ shiny brown, with a few pale scales and golden bristles. Abdomen black, covered with black scales with violet reflections, posterior border-hairs pale, giving a quasi-banded appearance in some specimens, and with white basal lateral spots, venter with basal pale, almost white bands. Legs dark brown, almost black, unbanded ; coxæ pale, also the base and venter of the femora ; fore and mid unguis rather small, equal and uniserrated, the teeth very small ; femora, tibiæ and metatarsi with a few spines ; femora rather swollen. Wings with the fork-cells rather short and with brown scaled veins. First sub-marginal cell longer and narrower than the second posterior cell, its base slightly nearer the base of the wing than the base of the latter, its stem a little more than half the length of the cell ; stem of the second posterior not quite as long as the cell ; cross-veins rather pale, the posterior about its

own length distant from the mid or a little less ; the supernumerary cross-vein is longer than the mid, but not quite so long as the posterior cross-vein. Halteres with ochraceous stems and fuscous knobs with a few grey scales.

Length, 4 mm.

♂. Head all black scaled, with the lateral pale areas only. Thorax and abdomen as in the ♀. Palpi rather longer than the proboscis, very thin, black, no hair-tufts, resembling those of Desvoidea. Apical segment of palpi slightly shorter than the penultimate segment. Wings long, fork-cells short, first submarginal cell longer and narrower than the second posterior cell, its base slightly nearer the apex of the wing than that of the second posterior, its stem as long as the cell ; stem of the second posterior longer than the cell ; supernumerary and mid cross-veins almost in one straight line, the posterior about its own length distant from the mid. Legs as in the ♀ ; fore unguis unequal, the larger nearly twice as long as the smaller, both uniserrated, the serration of the smaller close to the base ; mid unguis equal and uniserrated ; hind equal and simple.

Length, 4 to 4.5 mm.

This insect is never plentiful, but has a wide range in South Queensland ; it is a biting mosquito, and at first sight mistaken for *Culex annulirostris*, but on closer inspection the yellowish band on the thorax is noticed, and the unbanded proboscis ; under the microscope it is seen not to be *Culex*. I secured males, from breeding out a mixed lot of larvæ obtained from a cask, placed in a small scrub on Deception Bay.

Eggs and larvæ not observed.

#### SCUTOMYIA.—THEOBALD (1904).

Head covered with flat scales except in the mid region, where there are narrow-curved scales forming a median row. Scutellum entirely clothed with flat scales. Other characters as in *Macleaya*. This genus differs from *Stegomyia* in having narrow-curved scales on the head, and from *Macleaya* in having the scutellum with all flat scales. From *Leicesteria* it differs in having all flat scales on the scutellum.

#### SCUTOMYIA NOTOSCRIPTA.—*Skuse* (1888).

♀. Head black, with black scales some upright forked ones ; a patch of yellowish-white scales in the middle behind, and a silvery-white border to the eyes ; bristles black ; antennæ black, with pale pubescence and black verticillate hairs ; palpi black scaled, with the apex pure silvery-white ; proboscis black, with a pure silvery-white band in the middle, slightly testaceous at the base ; mesothorax deep umber-brown to almost black, with numerous bronzy-black flat spindle-shaped scales (under a hand lens it looks velvety umber-brown) ; there is a narrow median silvery-white line, which expands round the bare patch in front



of the scutellum, a long curved one on each side, a short one on each side of the median line in front, and another short one on the outside of each of the curved lines behind; scutellum brown, with a basal band of pure silvery-white, composed of a single row of flat broad scales, a few also on the mid lobe; bristles black, there being five in the middle lobe; pleuræ paler brown than the rest, with six large and several smaller patches of white scales; metanotum pale brown; mesonotum beset with numerous long black bristles. Abdomen covered with black scales with purplish reflections, each segment with a basal lateral patch of silvery-white scales, and a few white scales on the base of the segments every here and there; posterior borders with golden-brown scales; first segment deep ochraceous, with ochraceous and black scales, and numerous golden hairs. Legs with the coxæ pallid, femora black, pale at the base and down one side with a silvery-white line in front and a white apical spot; tibiæ black, also with a pure silvery-white line along its length; metatarsi black, with broadish basal white bands; in the fore legs the first tarsal joint with a basal white ring, remainder black, and in the mid legs there is a trace of basal white banding on the second joint as well; in the hind legs all the tarsi have a broad basal white band, save the last, which is pure white except for a patch of brown scales below at the apex; front ungues equal, with a single tooth on each, mid and hind equal and simple, the latter very small. Wings with the veins covered with black scales, their apical terminations with long thin lateral scales and shorter broad ones also lateral; first sub-marginal cell considerably longer and narrower than the second posterior cell, its base almost level with that of the latter, if anything a little nearer the base of the wing; stem less than one-third of the length of the fork-cell; second posterior cell about one and a-third times the length of its stem; posterior cross-vein twice its own length distant from the mid cross-vein; fringe grey. Halteres with pale stem and black knob.

Length, 4 to 5 mm.

♂. Head covered with black scales with a border of silvery-white ones round the greenish-golden eyes, a patch of ochraceous scales in the middle of the back of the head and a row of black bristles projecting forwards. Antennæ brown, banded, verticils silky brown, basal joint with a small patch of silvery-white scales; palpi ochraceous-brown, sparsely covered with dark brown scales basally, becoming jet black towards the apex, last two joints with broad basal bands of pure white scales; proboscis black, with a band of pure white on the base of the apical half. Abdomen like the ♀, but with a distinct basal band of ochraceous and white scales, the silvery lateral basal spots not so distinct on the anterior segments; genitalia brown. Legs as in the ♀, but the basal band on the second tarsal joint of the mid legs is often not visible; ungues of fore and mid legs unequal, the larger one

toothed with a long tooth, the smaller with a short one nearer the base, hind ones equal, with a trace of a small central tooth. Wings with the first sub-marginal cell longer and much narrower than the second posterior cell, the cell about one and a-half times the length of the stem ; stem of second posterior cell not quite as long as the cell, about the same length as that of the former cell ; bases of the cells nearly opposite ; posterior cross-vein about one and a-half times its own length distant from the mid cross-vein.

Length, 4.5 mm.

This elegant insect is very common, throughout the year, all over Southern Queensland, New South Wales and Victoria. It can be told at a glance from *Stegomyia fasciata*, the "Tiger Mosquito," by its darker colour and banded proboscis, and from *Culex vigilax* by the silvery line of scales on the scutellum, and the banded proboscis, and also from the curious habit of continuously lifting up and down the hindmost pair of legs ; it oviposits singly in small collections of water in crevices and hollows of trees both in scrub and forest, in flower pot saucers in the fernery, in water jugs in the house, in jam tins and bottles in the rubbish heap ; the eggs are oval, black with a silvery mesh-work pattern ; it lives for months in confinement, but refuses to oviposit, or only on rare occasions ; the eggs are laid at the edge of the receptacle at the water line ; it is a biting mosquito, but never becomes so numerous as to cause annoyance in Queensland at any rate. Skuse discovered this species in Sydney, and said it caused a painful wound ; here its bite is scarcely felt ; nothing compared with that of *Culex vigilax*, the "Black Bush Mosquito."

#### MACLEAYA.—THEOBALD (1903).

Head covered with flat scales over most of its surface, but with a median line of narrow-curved scales. Palpi short in the female, composed of three segments, with two basal constrictions ; apical segment minute, penultimate one large, swollen apically and truncated : the ante-penultimate broad apically, becoming narrower and swollen again basally, two basal constrictions looking almost like joints. The apex of the penultimate segment is studded with round spots. Palpi long in the ♂, longer than the proboscis, the two apical segments short, rather swollen, also the apex of the ante-penultimate ; hair tufts rudimentary. Thorax with narrow-curved scales ; scutellum with small flat scales on the median lobe, narrow-curved ones on the lateral lobes.

This genus comes near *Stegomyia*, but differs in having narrow-curved scales on the centre of the head and on the lateral lobes of the scutellum.

MACLEAYA TREMULA.—*Theobald* (1903).

♀. Head black with flat black scales forming a large patch on each side, then a small grey patch, another small black one, and then more grey scales outside; the middle of the head with silvery white narrow-curved scales, and a silvery white line around the eyes; numerous small black upright forked scales over the occiput; palpi black with grey tips; clypeus and proboscis black; antennæ black, the base of the second segment bright testaceous, the second segment with small grey scales. Thorax deep brown, covered with very small narrow-curved bronzy-brown scales, with more or less pronounced irregular lines of pale golden scales; the line over and in front of the root of each wing curved; the golden scales are broader than the dark ones; on each side in front is a short line of white scales and the prothoracic lobes are covered with similar coloured ones; in front of the scutellum are irregular (often indistinct) short lines of larger pale creamy scales, and some long backwardly projecting black ones; scutellum testaceous-brown, the mid lobe with small flat grey scales in the middle, black ones at the sides, the lateral lobes with narrow-curved whitish ones; border-bristles large and black, there are also very large black ones on the mesonotum; metanotum black; pleuræ brown, with patches of flat grey scales. Abdomen black, the segments with basal median creamy spots, and basal lateral silvery white ones; the last segment (sometimes the last two) without the median spot; first segment testaceous, with black scales; border-bristles jet black; venter white at the base, some of the segments with basal white areas, the apical segments black; genitalia white scaled. Legs black, banded; coxæ pale with patches of white scales, very long; femora black above, white ventrally; knee spot white; tibiæ black; in the fore and mid legs the first tarsal and second tarsal segments have narrow white basal bands, last three tarsals black; in the hind legs the first, second and third tarsal segments have broad snowy-white basal bands, fourth tarsal all black, the fifth all white; unguis of all three pairs of legs equal and simple. Wings with brown scales, the lateral scales long and thin; the first sub-marginal cell longer and narrower than the second posterior cell its base nearer the base of the wing, its stem less than half the length of the cell, stem of the second posterior cell as long as the cell; posterior cross-vein longer than the mid. about one and a-half times its own length distant from it; first longitudinal vein and the sub-costal densely scaled with large dark brown spatulate scales; fringe brown; base of the wing pale. Halteres pale ochreous.

Length, 4.5 mm.

♂. Palpi black scaled, apical segments white, base of penultimate segment white, also apex of ante-penultimate, a small pale band about the middle of the long ante-penultimate segment, a few prominent black bristles on the last two segments, not



forming regular hair-tufts, a distinct black spine at the apex of the ante-penultimate segment; the apical segment about half the length of the penultimate; plume hairs of antennæ deep brown. Thorax as in the ♀. Abdomen narrow, brown, with either basal lateral white spots or basal white bands, which spread out laterally; hairy. Basal lobes of the genitalia broad and truncated. Legs ornamented as in the ♀; fore and mid unguis unequal, the larger uniserrated; hind equal and simple.

Length, 4.5 mm.

This rare and delicate mosquito, I bred from a few larvæ obtained from a well and also a water cask at Deception Bay; it lives well in confinement, and will bite when encouraged; oviposits singly. The larvæ are pale in colour, almost white; during one winter I kept some alive and they appeared to give birth to young larvæ (pædogenesis) on August 26th, 1903; I tried to verify this observation, but it did not occur in summer; unfortunately, I have not been able to obtain larvæ since with which to make further observation in winter. One or two of these mosquitoes oviposited in an aquarium covered with muslin; in due course young larvæ were noticed, and these grew to maturity, and were turning into pupæ when a number of minute larvæ were observed; the question was:—Were these minute larvæ produced by the other larvæ? If they were not, they were from eggs, which had not hatched out in the first instance, and which had lain dormant about two months. The eggs of some mosquitoes, which oviposit singly, easily sink in water if touched, and it is reasonable to suppose that the incubation period might be affected in consequence. Many more observations need to be made to clear up these questions.

#### GILESIA.—THEOBALD (1903).

Head covered with rather broad flat spindle-shaped scales; mesothorax with scattered flat spindle-shaped scales and narrow curved ones; scutellum with small flat scales and some spindle-shaped ones. Palpi four-jointed in the ♀, rather long, about one-fourth the length of the thick proboscis, apical joint long, penultimate joint swollen, globose, the two basal joints small. Basal joint of the antennæ with numerous hair-like bristles and a few small flat scales. Ungues very thick, rather short and all with a thick blunt tooth. Wing venation much as in *Culex*; fork-cells short and the veins clothed with rather broad elongated scales like *Tæniorhynchus*.

Male unknown.

This genus is related to *Culex* on the one hand and *Stegomyia* on the other, whilst the wings give it a *Tæniorhynchus*-like appearance. The important characters are the scale ornamentation of the head and scutellum and the hairy and scaly basal antennal joint and the curious claws and palpi. A single species only is known from Queensland.

GILESIA ACULEATA.—*Theobald* (1903).

♀. Head brown, covered with flat spindle-shaped pale creamy scales, except round the eyes, where the scales are smaller and bright golden; there are also numerous narrow black upright forked scales; clypeus shiny black; palpi bright yellowish-testaceous with rather scanty flat black scales and a few black bristles, longish, about one-fourth the length of the black proboscis, which is rather thick; antennæ brown, the basal joint and the three following joints bright ochraceous, basal joint with numerous black hairs and a few small flat black scales, second joint with a few small black scales also. Thorax dark brown, scantily covered with rather large flat creamy spindle-shaped scales at the sides of the mesothorax and behind, with narrow-curved creamy yellow scales in the middle; a few rather short black bristles over the roots of the wings; scutellum dark brown, testaceous at the base, irregularly covered with small flat and small spindle-shaped creamy scales, with apparently a double row of brown bristles to the border of the median lobe; metanotum brown and deep testaceous, shiny; pleuræ dark rich brown, with numerous scattered pale flat scales. Abdomen greyish brown at the base, steely black at the apex (when denuded), covered with deep brown scales with dull violet reflections, traces of irregularly creamy white to almost yellow basal banding on the basal segments, on the last three apical segments the pale scales spread out over the whole of the segments, giving them a mottled appearance, and especially forming more or less distinct ochraceous yellow apical bands, the scales on the apical segment being particularly bright; the basal pale-scaled bands spread out laterally to form distinct large lateral creamy white spots; venter with scattered white scales. Legs brown, mottled on the femora, tibiæ, and metatarsi with yellow scales; tarsi and metatarsi with basal creamy white bands, except the last tarsal joint apex of femora, tibiæ, and other joints dark scaled; the pale scales form more or less of a ring before the black apex of the femora; tibiæ very bristly, and to some extent the femora; the whole of the last tarsal joint on all the legs black; unguis large and thick, all unserrated. Wings large, slightly clouded; the veins covered with brown *Tæniorhynchus*-like scales, wings longer than the abdomen; fork-cells short; first sub-marginal cell slightly narrower and scarcely longer than the second posterior cell, its stem more than half the length of the cell, its base a little nearer the apex of the wing than that of the second posterior; stem of the latter more than two-thirds the length of the cell; posterior cross-vein rather close to the mid cross-vein. Halteres with pale stem and brown knob.

Length, 6 mm. Time of capture, May. Habitat, Southern Queensland.

This is a large biting mosquito, at first sight resembling *Culex tigripes*; only two females have so far been taken; found



in Mrs. Bell's scrub on Deception Bay. Endeavour was repeatedly made to capture more specimens. A male mosquito, bred from larvæ obtained in the Burpengary scrub, appeared to me to be this species; unfortunately it was either broken up in transit to England or lost at the British Museum, before being examined by Mr. Theobald.

#### GRABHAMIA —THEOBALD (1903).

Allied to *Culex* and *Tæniorhynchus*. Palpi of ♀ four-jointed, with the apical joint minute, penultimate joint long and thick, two basal joints moderate sized. Palpi of ♂ long; the last two joints may be slightly swollen and have distinct hair-tufts. Head with narrow-curved scales, upright forked ones, and flat lateral ones. Thorax with narrow-curved scales. Legs mostly mottled and spotted, Wings with rather thick median scales and often short broadish lateral ones on some of the veins, neither so long nor dense as in *Tæniorhynchus*. Wings short and stumpy. Fork-cell short. Scales mottled.

#### GRABHAMIA FLAVIFRONS.—Skuse (1888).

♀. Head deep brown with large pale creamy and golden narrow-curved scales, with upright forked scales on the occiput, darker at the sides giving a dark-hued appearance to them, flat pale scales at the sides and some brown and golden chætæ projecting forwards; palpi deep brown with white scaled apex and a narrow white band towards the base and some long brown chætæ; proboscis black at the apex with scattered pale scales on the basal two-thirds; antennæ brown with pallid bands and pale creamy scales on the basal segment. Thorax deep brown with narrow-curved golden scales all over it, paler in front of the scutellum; scutellum pale brown with pale creamy scales and brown border-bristles; pleuræ brown with flat pale scales. Metanotum brown. Abdomen deep brown with pale creamy scales at the bases of the segments irregularly disposed and spreading out laterally, last two segments with many pale scales; basal segment pale brown with scattered pale creamy and a few dark dusky scales and pale golden hairs. Venter mostly pale scaled. Legs with mottled brown and creamy femora and tibiæ, the fore and mid first tarsals and the fore two following tarsals with narrow yellowish pale basal bands, the hind legs with an extra pale band on the third tarsal. Ungues of the fore and mid legs equal and uniserrate, of the hind equal and simple. Wings with yellow scales scattered amongst the brown, with dense large broad spatulate and narrower linear scales. The broad spatulate scales are evidently the median vein scales widely expanded. First sub-marginal cell longer and narrower than the second posterior cell, their bases nearly level, stem of the first fork-cell about three-fourths the length of the cell; stem of the second posterior two-thirds the length of the cell;

posterior cross-vein not quite as long as the mid about its own length distant from it. The wings are noticeable for the fact that the scales are larger than in most *Grabhamias*. Halteres pale creamy.

Length, 4.8 mm.

This is a biting mosquito, distributed over a wide area in Southern Queensland, but rare about Brisbane; I found two specimens in the house at Deception Bay, and one on Taylor's Range; in a few mosquitoes sent from Charleville this species occurs, and also in a small collection from Normanby Station, which points to its being commoner inland. Mr. Tryon took one in Victoria Park, Brisbane; it also occurs in New South Wales (Masters).

The eggs, larvæ and males have not been observed. To the naked eye it has some resemblance to both *Culex vigilax* and *Culex occidentalis*; but under the microscope the wing scales are seen to be very remarkable and beautiful.

#### CULEX.—LINNÆUS. (1758)

Palpi of the ♀ short, three or four-jointed; of the ♂ long, three-jointed; constrictions at the bases may give the ♀ a four or five-jointed and the ♂ a five-jointed appearance; the last joint in the ♀ is usually large; the male may have the last two joints swollen, much as in *Anopheles*, or they may be narrower and the last pointed. The antennæ are pilose in the ♀, plumose in the ♂, and are composed of fourteen joints in the ♀, fifteen in the ♂, the last two in the male being long and thin. Head ornamented with narrow curved scales over the occiput, and upright forked scales especially thick on the back of the head, flat scales on the sides; thorax with narrow-curved hair-like or spindle-shaped scales; scutellum with narrow-curved or spindle-shaped scales only; abdomen with flat scales; wings with small median scales to the veins and more or less thin linear lateral ones to some or all of the veins. In the wings the first submarginal cell is longer and narrower than the second posterior cell, and the posterior cross-vein is always nearer the base of the wing than the mid cross-vein. The ungues of the ♀ are equal, simple or uniserrated, of the ♂ unequal on the fore and mid legs, the larger uni- or biserrated, the smaller uniserrated or simple.

The genus contains a large number of species. An attempt has been made by Felt to divide it up into a number of genera upon certain characters, which, according to Theobald, will not hold.

#### CULEX FATIGANS.—Wiedemann (1828).

♀. Head brown, covered with pale golden-brown to creamy curved scales and a few scattered black, dark brown, and occasionally ochraceous upright forked scales, flat creamy-white

scales laterally, and a faint pale narrow border round the eyes, numerous black and brown bristles; antennæ dark brown, with pale pubescence; basal joint pale ferruginous to ochraceous basal half of the second joint pale ferruginous; palpi densely covered with deep brown scales, and in some specimens with a few pale grey ones, and with numerous small black bristles; proboscis covered with dark brown to violet-black scales, sometimes paler in the middle, and with a pale apex. Thorax brown, with two darker lines on the denuded surface, sometimes with traces of a third median line, covered with bright golden to pale golden or almost fawn-coloured curved scales, some being rather broader than others; there are also three rows of black bristles, the median one ending at the bare space before the scutellum; scutellum dull ochraceous, with pale golden to creamy curved scales and brown border-bristles, which vary in number on the median lobe; metanotum pale chestnut-brown, in some specimens with darker markings; pleuræ pale testaceous, with three or more small patches of pale, almost white scales. Abdomen covered with brown to deep purplish-brown or almost black scales, each segment with a basal white band rather expanded in the middle, and with white lateral patches, which show especially in gorged specimens; posterior borders of the segments with pale golden-brown hairs; venter with numerous dull white scales; the first abdominal segment is dull ochraceous-brown (black in gorged specimens), with two patches of dull violet-black or ochraceous scales and numerous golden-brown hairs. Legs with the coxæ deep ochraceous; femora deep brown above and at the apex, grey beneath, and tipped with a few yellow scales; tibiæ deep brown, with a deep ochraceous apical spot (sometimes absent), and with pale dull brown bristles; metatarsi and tarsi deep brown to almost black, with dull ochraceous reflections in some specimens; hind metatarsi a little shorter than the hind tibiæ; ungues equal, simple, and of moderate size. Wings longer than the abdomen, the veins clothed with brown and purplish-brown scales; long scales on the whole of the second and fourth long veins, also on the third, the upper branch of the fifth, and the end of the sixth, as well as on both the branches of the fork-cells; the first sub-marginal longer and slightly narrower than the second posterior cell, its stem short, always more than one-fourth the length of the cell; the stem of the second posterior cell longer than that of the sub-marginal cell, but not nearly as long as its fork: the posterior cross-vein a little longer than the mid-cross-vein, distant from the latter always more than its own length, usually about twice its own length distant. Halteres ochraceous, slightly fuscous at the top.

Length, 4.5 to 5.5 mm.

♂. Head ornamented as in the ♀; antennæ deep umber-brown, with pale bands and deep brown verticillate hairs; basal joint large, pale ochraceous, palpi deep ochraceous, covered



with brown scales, with a single pale band towards the basal third, longer than the proboscis by the last joint and nearly half the penultimate joint, the last joint tapering to a point, just a little longer than the penultimate joint; clothed on each side of the last two joints with moderately long but scanty dark brown hairs, which also exist at the apex of the ante-penultimate joint; proboscis deep ochraceous, swollen towards the apical end, covered with deep purplish-brown scales; apex testaceous, sharply acuminate. Abdomen narrow, covered with brown scales, deep purplish-brown to almost black in some specimens, with basal white bands, which on the last few segments spread out laterally; venter with grey or dull white scales, clothed above and laterally with numerous golden-brown hairs. Wings with the bases of the fork-cells nearly level; the first sub-marginal cell from one and a-half to two and a half times as long as the stem; stem of the second posterior cell about as long as the cell; posterior cross-vein about twice its own length distant from the mid cross-vein. Legs rather more ochraceous than in the ♀; fore and mid unguis unequal, dark brown to black; in the fore legs both are toothed, the larger one having a long blunt tooth about the middle, the smaller a sharp-pointed one towards the base; in the mid legs the unguis are very similar, but the larger tooth is a little more curved; hind unguis equal, small, moderately curved.

Length, 4 to 5 mm.

The "House Mosquito"; man's greatest enemy; it is purely nocturnal in habit; it has a wide distribution in the world, associated with the human race everywhere except in very cold latitudes; breeds in stagnant water, in tanks, and even in cess-pits, and occasionally in watercourses up to a mile distant from habitations. Oviposits in a large boat-shaped raft; the eggs are white when freshly laid, but change to dark brown or black in a few hours even if kept in absolute darkness; the eggs are laid as a rule between 6 and 8 p.m.

This mosquito is the cause of untold misery to man, and the domesticated animals; is the intermediary host for a number of parasites, perhaps the most important being *Filaria* of man and the dog. It will live in confinement, fed on banana or dates up to two months.

#### CULEX VITTIGER.—*Skuse* (1888).

♀. Head brown, clothed with rather long, loose pale curved scales in front, and with similar ochraceous ones behind, and with numerous thin upright forked ochraceous ones over the occiput; the flat scales on the genæ very small; eyes deep purplish-black; antennæ with the basal joint bright ochraceous, with numerous black hairs, second joint mostly testaceous, the apex just darkened, the next three or four joints more or less testaceous except at the base,

remainder dark brown; clypeus dark brown; palpi long, the apical joint mamilliform, the penultimate moderately long, ante-penultimate a little longer than the penultimate, second about as long as the penultimate, rather enlarged; when denuded, testaceous; covered with ochraceous and brown scales, allowing the testaceous ground colour to show through; apex with very dark brown scales, all the joints with dark bristles. Thorax deep blackish-brown, with broad lines of narrow-curved very pale golden-grey scales and four broad lines of similar bronzy-black scales, with brown bristles, which are more or less golden over the roots of the wings, a bare space in front of the scutellum; scutellum deep brown, with pale golden-grey, narrow-curved scales, rather dense on the mid lobe, with numerous rich golden-brown border-bristles; metanotum deep bright brown; pleuræ deep brown, densely covered with flat greyish-white scales, Abdomen deep brown, the segments mostly covered with pale ochraceous and grey scales, with some dark ones on the middle of the anterior segments, giving a banded appearance; there are also a few white lateral ones; basal on some, median on other segments; venter with pale ochraceous scales, with black-scaled apical borders, the black scales appearing as black apical patches at the sides when viewed dorsally; posterior border-bristles short. Legs brown, ochraceous at the base, and the metatarsi and tarsi basally pale banded, the fore and mid metatarsi with only narrow apical black bands, the tarsi small and with narrow basal pale bands, the pale bands decreasing in size from the first to the last tarsal joint; hind legs with the banding more distinct; all the joints more or less bristly; fore, mid and hind ungues equal, large, uniserrated. Wings with typical deep yellowish-brown *Culex* scales, the scales on the base of the veins ochraceous and brown; fork-cells very short; first sub-marginal cell longer and about half the width of the second posterior cell, which is very short and broad, its stem equal to nearly two-thirds the length of the cell; stem of the second posterior as long as the cell; posterior cross-vein not quite its own length distant from the mid cross-vein; fringe brown, with rather long dark border-scales; the costal border somewhat yellowish, and the scales of the sub-costal very pale yellow; there is a tinge of brown on the wing field at the cross-veins. Halteres ochraceous-brown, slightly dusky at the knob.

Length, 6 mm.

Found along the seaboard from Port Denison to Gosford in N.S.W. It is a biting mosquito, plentiful at times only; it is recognizable at a glance by the yellowish colour and black marks on the thorax. The males have not been found. Attempts have been repeatedly made to obtain eggs; these mosquitoes, although of a wild nature, will live a few days in confinement, and will oviposit; the eggs are laid singly; they are black, thick set, oval in shape, studded with papillæ; for the most



part they never hatched out ; on one occasion some came out, but the larvæ lived only a few days ; examined microscopically, they had the appearance of other mosquito larvæ, so water of some kind is the medium in which they live. I have noted that in glass aquaria young larvæ frequently die mysteriously, and have concluded that the cause was the water getting too cold during the night. Wooden vessels are preferable to glass.

CULEX ALBOANNULATUS.—*Macquart* (1850).

♂. Head brown, covered with golden and white scales, the white scales especially in the middle, and a patch of flat white ones on each side ; behind, on each side of the middle line, is a patch of dark brown or black upright forked scales, which also pass forwards ; eyes purplish-black, with silvery lustre ; antennæ dark brown, with faint narrow pale bands, basal joint and base of second joint testaceous ; palpi black scaled with the fourth joint with a ring of white scales at the base and the small apical fifth joint also white scaled ; proboscis dark brown, with a few grey scales towards the base, apex quite black. Thorax deep umber brown, with white and golden scales in the majority of specimens, showing no ornamentation, but when fresh, the white scales are seen to be symmetrically arranged : a central very narrow bare line runs back to near the scutellum, where it ends in a bare spade-shaped patch, which has two patches of narrow-curved white scales in front, and two of white scales at the base near the scutellum, a small oblique line of pale curved scales on each side in front and traces of two others farther back, and which, according to Skuse, in fresh specimens are hook-shaped, as shown in his figure ; there is also another patch above the root of the wings on each side ; scutellum testaceous brown, with three patches of pale, thin, curved scales : metanotum deep brown, testaceous at the sides ; pleuræ dark reddish-brown, with patches of white scales. Abdomen covered with deep brown almost black scales, with sometimes pale brown reflections, the bases of the segments each with a patch of white scales, not quite forming a band ; sometimes, according to Skuse, the white scales are entirely absent ; posterior borders and sides with yellowish hairs ; in some specimens there are indistinct white lateral spots, the lateral white spots being centrally disposed ; venter brown, with thick white basal bands. Legs with the femora pale at the base, dark scaled towards the apex ; just before the apex, which is very dark, is a pale or white band, extreme tip yellow to almost white ; tibiæ covered with purplish-black scales with pale hairs ; fore metatarsi with basal pale bands, also the first two tarsal joints, last two with purplish-black scales only ; mid legs the same ; hind legs with their metatarsi and first three tarsal joints very broadly banded with white at the base ; hind metatarsi a little shorter than the tibiæ. Fore, mid and hind ungues equal, toothed.

Wings with the veins covered with dark brown scales, some of which are moderately long; first sub-marginal cell longer and narrower than the second posterior cell, its stem equal to a little more than half its length; that of the second posterior cell not quite equal to the length of the cell; posterior cross-vein nearly twice its own length distant from the mid cross-vein. Halteres with ochraceous stem and pale fuscous knob, sometimes all ochraceous.

Length, 5 to 5.5 mm.

♂. Antennæ light brown, with pale silky brown plumes, basal joint black; palpi dark brown, with two broad, basal white bands on the second and third joints, and with white ones also to the last two, hairs dark brown, gold and yellowish; abdominal segments with white basal bands, the last segment often with two white spots; claspers black; laterally there are numerous golden hairs, which also occur along the posterior borders of the segments. Fore unguis unequal, the larger uniserrated, the smaller simple.

Length, 5, to 5.5 mm.

This mosquito is occasionally found breeding in wells in Southern Queensland; only rarely bites; looks like *Culex vigilax*, but when critically examined under the microscope it is seen to be distinct; will live in confinement and oviposit; the eggs are laid singly, are long oval in shape, black with a silvery mesh-work pattern on them. Every few years, at a particular time, fresh water lagoons in the vicinity of Deception Bay are seen to harbour millions upon millions of larvæ of this species; directly the mosquitoes emerge, they fly off to the South; it is a plentiful and biting insect in the Southern States.

#### CULEX RUBITHORAX.—*Macquart* (1850).

♀. Head black, with a narrow border of thin golden curved scales around the eyes, then a broad band of black flat scales, then golden curved ones behind, and a few flat creamy ones at the sides, some golden curved ones also forming a central mass towards the eyes, with dark and golden-brown upright forked scales; eyes silvery; antennæ dark brown, basal joint and base of second joint ochraceous; palpi testaceous at the base, black at the top, with black scales; proboscis black, the apex and base and down the centre and sides of the mid region with ochraceous and brown scales; clypeus dark brown. Thorax bright chestnut-brown, with scattered golden curved scales, with four double rows of brown bristles; scutellum chestnut-brown, with golden scales and brown bristles; metathorax chestnut-brown, with a purplish patch on each corner of the base; pleuræ chestnut-brown, with patches of white scales; prothoracic lobes with flat black scales and black bristles. Abdomen clothed with dusky, purplish-black scales, each segment with a narrow basal band of creamy-white and with white lateral spots, the last segment unmarked, the two

preceding with the white spots showing on the dorsum and with very faint basal banding; each segment with a row of golden bristles on their posterior borders; venter white scaled, with some apical black scales. Legs with the femora ochraceous, with dusky scales, pale beneath, and a minute yellow knee spot on the hind legs; tibiæ black, with golden bristles; fore metatarsi and tarsi black scaled, the former and the first tarsal joint faintly pale at the base; in the mid legs the basal bands a little more distinct, and a trace on the second tarsal joint; hind metatarsi and tarsi basally pale banded, metatarsi shorter than the tibiæ; ungues of the fore and mid legs equal and with a single tooth, hind claws equal and simple. Wings with the veins brown-scaled, except at the roots, where the scales are deep-purplish black; first sub-marginal cell a little longer and much narrower than the second posterior cell, its stem a little more than half the length of the cell; stem of the second fork-cell about the same length, not quite so long as the cell; posterior cross-vein a little more than its own length distant from the mid cross-vein; lateral scales of the apical portions of the veins long and narrow and blunt at the summit. Halteres pale ochraceous, with slightly fuscous knob.

Length, 5 mm.

This mosquito is never plentiful, yet a few specimens can be obtained any day biting in forest country round about Moreton Bay. It is about the size of *Culex vigilax*, from which it can be distinguished by its ruddy thorax, and from *Culex occidentalis* by its smaller size, and from *Culex cylindricus* by the banded legs. Nothing is known of the life history.

#### CULEX TIGRIPES.—*Grandpré* (1900).

♀. Head brown, with golden-brown curved scales, and scattered black upright forked ones, with a tuft of orange bristles in front projecting forwards, and other dark bristles laterally. Eyes black, with a silvery lustre over part of their surface; antennæ dark brown, with basal joint pale testaceous, also the base of the second joint; a few broad yellowish scales on the second joint; palpi very dark brown, with a few pale scales internally; proboscis deep brown to black. Thorax dark brown, covered with reddish-brown curved scales, with three round spots of pale yellowish scales, the front one median and often rather indistinct, the two hinder ones clear, from each there runs backwards a line of pale scales, more or less distinct; metanotum chestnut-brown; pleuræ brown, cinereous below, with a few pale scales. Abdomen deep brownish-black (sometimes looking quite black under a lens), with an apical border of creamy scales, which are much the broadest on the last two segments; posterior borders fringed with golden hairs; first abdominal segment deep ochraceous, with two patches of dull purplish and yellow scales and with numerous pale hairs. Legs brown, with the coxæ very pallid;



femora paler below, deep brown above, with a row of yellowish-white spots on one side, knee spot yellowish-white; tibiae deep blackish-brown with a row of creamy-white spots on one side with an ochraceous tinge in certain lights; metatarsi and tarsi almost black; unguis equal. Wings with the veins clothed with dark scales, costal border and first longitudinal very dark; posterior cross-vein about half its length distant from the mid cross-vein; first sub-marginal cell considerably longer and slightly narrower than the second posterior cell; base of the wings testaceous. Halteres with a pale stem and black knob.

Length, 6.5 to 7 mm; of proboscis, 3 mm.

♂. Antennae dark brown, faintly pale banded with dark brown plumes; palpi longer than the proboscis, dark brown, banded with dull yellow, the apical joint pointed, yellowish at the tip, with a narrow pale band at the base with grey scales; penultimate joint much shorter, pale at the apex and base, with grey scales on the latter; the long antepenultimate joint paler, with brown scales, some white ones on the apical half, and a clear pale yellow band lower down, base of the palpi darker brown; the last two joints, especially the penultimate, with long coarse black hairs. Thorax dark brown, with curved pale scales, the two paler spots being seen, but the median front one invisible; scutellum with pale creamy scales. Abdomen narrower than in the ♀, with apical yellowish-grey bands of scales and traces of white basal lateral spots, the last two segments with many grey yellowish scales; genitalia dark brown, densely ornamented with deep reddish-brown hairs; fore and mid unguis unequal, both uniserrated, deep black, hind ones equal and simple.

Length, 6.5 mm.

Habitat: Durban, Natal (Christophers); British Central Africa (Daniels); Mombasa (McKay); Bonny (Annett); Salisbury. Mashonaland (Marshall); Queensland (Bancroft).

In Theobald's remarks the following occurs:—It is a very annoying species. Dr. Bancroft has sent a series from Queensland, which exactly agree with the types from Africa; then again in Vol. III., *i.e.*, 1st. Supplement Monograph of Culicidae, is the following:—Grandpré described it from Mauritius; the series from Queensland consists of five ♀'s and seven ♂'s. I can detect no difference in them from those taken in Africa. It is called by Bancroft the "Long-lived Mosquito." Dr. Bancroft writes regarding this species as follows:—"Although to be found all the year round, but always very scarce, it will not bite; it is possibly out of its proper latitude; it breeds in fresh-water butts, about houses, and in fresh-water courses; specimens have been kept alive in confinement for as long as five months."

Additional localities:—Pretoria (Theiler); Lagos (Strachan); Zomba (Grey); Nigeria (Hanley); Straits Settlements (Wright); Uganda (Low); This is the "Long-lived Mosquito," a large black insect often found about houses; it does not bite either man or

animals in South Queensland. It will live up to five months in confinement, but refuses to oviposit. Owing to the shape of the egg raft, which is long, often half an inch, and very narrow, and jet black in colour, there is no difficulty in obtaining the eggs from collections of water near habitations.

The larvæ devour other mosquito larvæ, and also their own species; one larva will kill twenty larvæ its own size in a day; they prefer larvæ to other species to their own, possibly because the latter are harder to catch. If you place an egg raft containing one hundred or so eggs in a glass jar with water, as soon as the larvæ emerge, they commence eating each other, and in two or three days only one larva will remain. They seize the larvæ on the surface of the water generally by the tail, and swallow it tail first; should the victim by its wriggling be able to sink to the bottom, the victor lets go its hold and comes to the surface to catch a fresh one; the victim, however, cannot again rise to the surface to breathe, and very soon dies. Several larvæ will kill, in a few days, in this way, all the larvæ of other species, that may be in a well or water-butt; after that they watch each other all day and night; should one relax its attention for a moment, it will be caught; owing to this awful cannibalism, the species never increases in numbers.

This species might be justly termed a useful mosquito.

The larvæ have peculiarities, which are described as follows by Theobald:—The larvæ is quite different from others of *Culex* type. It is 10 mm. long, and greyish-brown in colour; the head has large fan organs like a *Megarhinus*, a truncated clypeus and simple antennæ ending in two spine-like bodies, one broader than the other, and two terminal bristles and two lateral ones near the apex; the head is much smaller than the thorax, and provided with simple hairs only; the eyes prominent. Thorax large, with lateral branched hairs arising from the side of brown conical papillæ. Abdomen composed of nine segments, the first six with lateral plumose hairs arising from brown prominent papillæ, flatter than those of the thorax; seventh segment devoid of the papillæ; the siphon very short, arising from the eighth segment, serrated on its upper edge with long hairs and two rows of short spines on the lower, one row mixed up with the fan of hairs; ninth segment terminates in two long bristles and has about eleven long branched hairs forming the ventral fan; the upper border is serrated. The pupa is about 9 mm. long, with siphons much as in *Culex*, but the opening is larger and more lateral. The anal fan is peculiar. On the posterior borders of the segments are some branched hairs.

*CULEX OCCIDENTALIS*.—*Skuse* (1888).

♀. Head brown, with long golden-yellow curved scales in the middle and bordering the eyes, and between them a band on each side reddish-brown in colour, composed of dark curved



scales ; the back of the head clothed with golden curved and up-right forked scales, a patch of pale creamy flat scales on each side, and then a patch of flat black scales; palpi black scaled, the apex white, and also a ring of white scales at the base of the fourth joint; antennæ dark brown, with pale pubescence and pale rings, basal joint testaceous with yellow scales, basal half of the second joint also testaceous; proboscis black; thorax bright deep reddish-brown, with numerous thin hair-like, curved, golden scales; scutellum pale testaceous, with golden-yellow scales, paler than on the mesonotum, and long brown bristles to the posterior borders; metanotum reddish-brown; pleuræ reddish-brown, with patches of creamy-white scales. Abdomen covered with dusky black scales, each segment with a narrow white basal patch, scarcely to be called a band, somewhat curved and each segment bordered with golden bristles; there is also a small white basal spot on each side of the segments; venter covered with creamy-white and dark scales. Legs with the coxæ chestnut-brown, with a few white and black scales; femora white at the base and beneath, black towards the apex, and mottled at the base above and at the apex below with black and white scales, extreme apex yellow; tibiæ deep brown to black; fore metatarsi and first two tarsal joints of the fore and mid legs basally banded yellowish-white, the bands being much more distinct in the mid than in the fore legs, last two joints black; in the hind legs the metatarsi and the first three tarsal joints have very broad, white, basal bands, the last only being black; tibiæ with a few golden bristles and a line of smaller pallid hairs; hind metatarsi about one-third shorter than the hind tibiæ. Ungues of the fore and mid legs thick, equal and uniserrated. Wings longer than the abdomen, the veins very densely covered with brown scales; testaceous at the base; first sub-marginal cell longer and narrower than the second posterior cell, its base a little nearer the base of the wing than that of the latter, its stem about two and a half times shorter than the cell; stem of the second posterior cell about one and a half times less; posterior cross-vein situated about its own length distant from the mid cross-vein and a little longer than the latter; mid cross-vein almost under the junction of the sub-costal and costal. Halteres ochraceous, with the knob fuscous on one side.

. Length, 5 to 6 mm.

♂. Palpi deep brown, with a white basal band to the apical and penultimate joints and a third broad pale band lower down; hair tufts on the last two joints and on the apex of the antepenultimate pale brown; apical joint considerably shorter than the penultimate joint. Antennæ with bright brown plume hairs. Proboscis thin, black. Thorax ornamented as in the ♀; Abdomen with distinct basal white bands. Legs banded as in the ♀, but the femora mottled with yellow instead of white

scales; fore and mid unguis unequal, both uniserrated; hind equal, thick, uniserrated.

Length, 5.5 mm.

Habitat: King George's Sound, Western Australia (Masters); Healesville, Victoria (Bancroft); Somerville, Victoria (Froggatt); South Queensland (Bancroft); Mt. Victoria, N. S. Wales (Bancroft).

A common biting mosquito in New South Wales and Victoria; uncommon in Southern Queensland; it is rather a handsome species, not unlike *Culex rubithorax* but larger, and with more pronounced banding of the legs. I bred it from mixed larvæ obtained from wells at Deception Bay; it also occurs in association with the larvæ of *Scutomyia* in crevices of scrub trees, holding a little water, on Kedron Brook. Oviposits in confinement; eggs laid singly, long oval, black, with silvery meshwork pattern.

*CULEX VIGILAX*.—*Skuse* (1888).

♀. Length of antennæ, 2.27 mm.  
 Expanse of wings, 4.31 x 1.27.  
 Size of body, 5.08 x 1.13.

Antennæ dark brown, three-quarters the length of the proboscis; joints of the scapus more or less ochraceous-brown or ochraceous. Head covered with dark brown scales, indistinctly mottled with yellow scales. Proboscis about seven times the length of the palpi, very dark brown or black, ochreous-yellow beneath from just beyond the base to a little beyond the middle. Palpi dark brown, the last joint with white scales at the apex. Thorax very deep brown or black, densely covered with deep brown or black scales, mottled with small patches of golden-yellow scales; pleuræ very deep brown, spotted with a few small patches of white scales; scutellum deep brown, sometimes tinged with testaceous, with golden-yellow scales and setæ; metanotum deep brown, nearly black, more or less testaceous at the sides. Halteres entirely ochre-yellow. Abdomen scarcely twice the length of the thorax, covered with violet-black scales, each segment except the first bordered anteriorly with a narrow band of very pale yellowish or whitish scales, the first segment set with numerous golden-yellow setæ and sprinkled with white scales; all segments with a small patch of pure white scales laterally below the extremities of the anterior bands; venter covered with very pale yellowish or whitish scales; lamellæ of the ovipositor deep brown. Coxæ light brown, with white scales. Femora violet-black above and at the apex, sprinkled with yellowish or whitish, beneath yellowish or whitish, nearly wholly violet-black in the fore legs; genua bright golden-

yellow. Tibiæ violet-black sprinkled with yellowish scales. Tarsi violet-black, each joint with a narrow ring of white at the base, rather indistinct on the last two joints of the fore and intermediate legs. In the hind legs the metatarsus rather more than two-thirds the length of the tibiæ. Wings longer than the abdomen, hyaline, with a pale yellowish tint anteriorly, veins covered with slender brown scales, cilia grey; rather brilliant reflections. Auxiliary vein joining the costa a little before the posterior branch of the fifth longitudinal fork; middle cross-vein longer than the posterior cross-vein, situated a short distance in front of the former; first sub-marginal cell somewhat longer and slightly narrower than the second posterior cell, the base of the former situated a little beyond the base of the latter; anterior branch of the fifth longitudinal vein originating opposite a point about mid-way between the origin of the second longitudinal and the tip of the sixth longitudinal vein, joining the posterior border opposite the middle of the second posterior cell.

♂. Head black, with pale golden curved scales and black and brown narrow upright forked ones, sides densely covered with flat white scales. Antennæ banded, plumes silky-brown and dull yellow, the top joints of the antennæ dark; proboscis dark brown, quite black towards the tip; palpi almost black, the penultimate joint and apex of the antepenultimate swollen, the apical joint thinner, faint basal pale bands on the last two joints, hair-tufts yellow. Abdomen with basal white bands, the last segment unbanded, but with a few white scales, the antepenultimate with the basal band expanded laterally, and with yellow apical scales; densely golden haired. Ungues of fore feet unequal, the larger one with two teeth, the smaller with one; hind ungues equal, each with a single tooth.

Length, 4.8 to 5 mm.

This is the "Black Bush-Mosquito," a most plentiful species everywhere in Southern Queensland, along the sea coast, more especially; it bites all the year round, both by day and night, and the bite is very painful; it sometimes occurs in millions; it does not come into the house, which is about all that can be said favourably of it. It lays its eggs singly in salt water swamps and pools of sea water that are left behind after high spring tides and king tides; the water in such pools becomes concentrated by evaporation, often up to a specific gravity of 1,060, but the larvæ are uninjured; small fish, if any, die before the water reaches a specific gravity of 1,040. Larvæ have been found in fresh-water creeks a few miles inland from the sea, but not in plentiful numbers. This mosquito prefers salt water. It can be told at a glance by its black colour and white banded legs. It extends into New South Wales (Skuse); specimens have been sent from the Johnstone River by Mr. A. Owen Jones and Mr. Edgar H. Webb.



CULEX ANNULIROSTRIS.—*Skuse* (1888).

|                       |                   |
|-----------------------|-------------------|
| ♀. Length of antennæ, | 2.27 millimetres. |
| Expanse of wings,     | 3.81 x 0.88.      |
| Size of body,         | 4.31 x 0.88.      |

Antennæ brown, the length of the proboscis; first joint of the scapus and basal half of the second joint testaceous. Head deep brown, nearly black with yellow scales. Proboscis deep brown, nearly six times the length of the palpi, with a prominent broad ring of white in the middle one-third the length of the proboscis. Palpi black or deep brown, the third and last joints almost imperceptibly tipped with white. Thorax deep brown, rather densely covered with yellow scales and hairs; pleuræ deep brown, spotted with a few small patches of white scales; a little testaceous under the origin of the wings; scutellum somewhat testaceous-brown, with long yellow hairs; metanotum deep brown. Halteres brownish-ochraceous. Abdomen twice the length of the thorax, deep brown, nearly fuliginous; each segment bordered anteriorly with a narrow band of white scales and fringed posteriorly with golden-yellow hairs; underneath covered with white scales. Coxæ reddish-brown, with white scales. Femora deep brown above, white beneath (in the fore and intermediate pairs the brown predominates), and just perceptibly white at the extreme apex; tibiæ and tarsi sordid brown, with a yellowish-grey reflection, all joints, except the last tarsal joint, with a small ring of white at the base. In the hind-legs the metatarsi equal in length to the tibiæ. Wings longer than the abdomen, hyaline, the veins thickly covered with brown scales, chiefly long and very slender, cilia brownish-grey. Auxiliary vein reaching the costa about opposite the tip of the posterior branch of the fifth longitudinal vein; middle and posterior cross-veins very pale, the former a little shorter than the latter and situated in front of it a distance equal to twice its length; first sub-marginal cell a little longer and distinctly narrower than the second posterior cell, its base situated almost opposite but slightly beyond the base of the latter; anterior branch of the fifth longitudinal vein originating at a point about mid-way between the origin of the second longitudinal and the tip of the sixth longitudinal, joining the margin opposite the middle of the second posterior cell.

♂. Head with creamy upright forked scales on each side in front, dusky ones behind, a bare line in the middle; grey and brown flat scales at the sides; antennæ brown, with pale bands and dark silky-brown plumes; palpi dark brown, with two broad basal pale bands and two narrow ones to the apical joints, the one broad band corresponds in position with the proboscis band; proboscis banded in the middle, expanded towards the apex, which darkens and then becomes paler, not so long as the palpi; ungues of fore and mid legs unequal, both serrated,

the smaller with a minute tooth ; hind ones equal and simple. Wings with rather blunter and broader lateral scales to the veins than in the ♀ ; both fork-cells short, the base of the second posterior cell nearer the base of the wing than that of the first sub-marginal cell ; stem of the latter equal to the length of the cell ; stem of the second posterior not quite so long as the cell ; posterior cross-vein nearly twice its own length distant from the mid cross-vein and somewhat longer.

Length, 4 to 4.5 mm.

Mr. Theobald makes a sub-species, but I do not think it will hold, as there is great variation in the scale ornamentation in this extremely plentiful insect.

Habitat : N.S. Wales (Masters and Skuse), Southern Queensland (Bancroft).

This is another extremely plentiful and annoying mosquito, biting by day and night ; found along the sea-coast, in association with *Culex vigilax*, from which it is easily recognised by the banded proboscis and black legs. It comes into the house ; will live well in confinement for a month or more ; oviposits in a boat-shaped raft similar in appearance to that of *Culex fatigans*. A mosquito raft on salt water will turn out to be this species. It breeds in sea-water, and fresh-water lagoons and wells. This species and *Culex vigilax* are the most troublesome and abundant native mosquitoes in Southern Queensland. It will, under exceedingly favourable conditions, occasionally act as host for the dog filaria.

CULEX PSEUDOMELANOCONIA.—*Theobald* (1907).

♀. Head deep brown, with narrow-curved golden-brown scales in the middle, flat grey ones at the sides, with ochreous upright forked scales at the middle, dark ones at the sides, and flat grey ones laterally. Proboscis and palpi dark brown. Antennæ and clypeus deep brown. Thorax deep brown with narrow-curved golden scales, somewhat smaller over the humeral area, with two median bare lines showing as two dark areas ; bristles brown, somewhat golden apically ; scutellum brown, with golden narrow-curved scales ; metanotum deep brown ; pleuræ greyish-brown to brown. Abdomen deep blackish-brown with golden-brown lateral and posterior border-bristles ; venter pale scaled. Legs deep brown with violet reflections, bases of the femora pale, unguis small, equal and simple. Wings with typical deep brown *Culex* scales, dense on the apical portions of the veins ; the first sub-marginal cell much longer and slightly narrower than the second posterior cell, its base much nearer the base of the wing, its stem a little less than half the length of the cell ; stem of the second posterior nearly as long as the cell ; the posterior cross-vein much shorter than the mid, about twice its own length distant from it, the mid cross-vein the largest of the three.



Length, 3 mm.

Time of capture : November.

Habitat : South Queensland.

I found this mosquito in Harris's scrub at Burpengary ; biting ; the larvæ have not been met with ; it is a perfect mystery where some mosquitoes breed ; it may not be in water at all ; possibly in damp soil, or in rotten wet wood.

Mosquito larvæ have been found by Mr. E. E. Green, in the flowers of *Heliconia brasiliensis* ; by Dr. Leicester in Bamboos, the female mosquito having entered through the holes made by boring insects. They have been observed also in Pitcher Plants, Bromelias, etc. D. W. Coquillett says *Dendromyia smithii* breeds in the leaves of Orchidaceous plants growing on trees. Dr. Low found the larvæ of *Deinocerites cancer* in crab-holes.

*CULEX BURPENGARYENSIS*.—*Theobald* (1905).

♀. Head deep brown, clothed with long narrow-curved pale golden scales and flat yellowish ones laterally, the upright forked scales ochreous ; palpi and proboscis brown ; clypeus bright brown, with a median sulcus and a blunt process on each side towards the base ; the palpi are clothed with almost black scales and bristles, the apical segment minute, the penultimate long. Antennæ brown, basal segments bright testaceous. Eyes black and silvery. Thorax deep brownish-black, clothed with irregularly disposed golden narrow-curved scales except on two median parallel lines, which show as two dark lines on the golden-scaled mesonotum, and which are ornamented with the narrow-curved bronzy-black scales, a few of these also occur over the roots of the wings ; bristles partly black, partly golden. Scutellum ochreous brown, with pale golden narrow-curved scales, the mid lobe with deep brown and golden border-bristles, the lateral with deep brown ones only ; metanotum brown and testaceous ; pleuræ testaceous and brown, with flat creamy scales. Abdomen deep brown in some lights, with violet reflections in others, the segments with basal lateral creamy patches, the basal segment testaceous with two patches of dark scales ; posterior border-bristles bright reddish-brown. Venter with yellowish basal bands. Legs brown with metallic violet and coppery hues, base and under side of femora ochreous ; fore and mid ungues equal, uniserrated, thick, hind equal and simple, straighter than the others. Wings with short fork-cells, first sub-marginal a little longer and narrower than the second posterior, their bases nearly level, its stem not quite so long as the cell, stem of the second posterior as long as the cell, posterior cross-vein about its own length distant from the mid, which is longer than the posterior ; scales brown. Halteres with pale stem, fuscous knob with creamy scales.

Length, 5.2 to 5.5 mm.

♂. Palpi deep brown, hair tufts deep brown; antennæ with deep brown plume-hairs. Head and thorax as in the female; pro-thoracic lobes prominent. Abdomen as in the female, but the basal parts of the segments are unscaled and testaceous, giving a broadly banded appearance. The first sub-marginal cell is only about half the width of the second posterior cell and about the same length, its stem the same length as the cell, whilst that of the second posterior is shorter. Ungues of fore legs curved, unequal, the larger uniserrated, the smaller simple; in the mid more unequal than the fore, the smaller curved and uniserrated, the larger simple, bent close to the base, then nearly straight; hind pair equal, simple, small and nearly straight, acuminate. Male genitalia with prominent claspers.

Length, 5 to 5.5 mm.

(Observations.—Described from a series of males and females collected by Dr. Bancroft, at Burpengary, S. Queensland. No other known Australian species has a similar abdomen. It cannot be confused with any other species. The male unguis are very marked. It clearly comes in Felt's new genus *Culicada*). I bred out these mosquitoes from mixed larvæ, obtained in a well in the Burpengary scrub. Eggs and larvæ, and whether the mosquito will bite were not observed.

*CULEX PROCAX*.—*Skuse* (1888).

♀. Head black, with a few pale curved silvery scales in front and the middle, and with broad flat white scales forming lateral patches, with a few broad dark scales at the sides as well forming a small dark spot; antennæ very dark brown, with narrow pale bands; palpi black scaled with a few grey ones; proboscis deep ochraceous, broadly black at the tip and at the base. Thorax black, with a few brownish-black and dull golden curved scales; scutellum brown; metanotum deep brown; pleuræ deep umber brown, with a few white scales. Abdomen black scaled, with narrow basal bands of white scales; venter black, with a few white scales. Legs dark brown, with the undersides of the femora pale; tibiæ brown, with a yellowish reflection in certain lights; metatarsi basally pale banded; first three tarsi of the mid and all four of the hind legs basally white ringed; unguis equal and simple. Wings with brown scales, the lateral ones long, costa dark brown; first sub-marginal cell short, much narrower and a little longer than the second posterior cell; their bases opposite; their stems nearly equal; mid cross-vein a little longer than the posterior cross-vein, situated from it about its own length distant; fringe grey. Halteres ochraceous.

Length, 3.8 to 4.5 mm.

Habitat: Gosford and South Clifton, N.S.W. (*Skuse*); Burpengary, S. Queensland (*Bancroft*).

Skuse says it is a day-flying species. Theobald remarks, "that it is the smallest known Australian *Culex*. The two clear white spots, one on each side of the head, and its small size, seem to be the most characteristic features."

It is a rare and obscure species ; looks like *Culex rubithorax* but when examined, under the microscope, it is seen to be a distinct species. I bred them from larvæ obtained from a water-hole after rains at Deception Bay. Since the females were sent to the British Museum, I bred out males, but the male has not so far been described.

The eggs and larvæ, and whether it is a biting mosquito, have yet to be observed.

*CULEX CYLINDRICUS*.—*Theobald* (1903).

♀. Head brown, clothed in the middle with narrow-curved dull yellow scales, black at the sides and with a few flat white scales laterally, numerous narrow upright forked scales of a pale brown hue ; palpi densely scaled with dark brown scales, with some long brown hairs ; antennæ brown ; proboscis black, expanded apically. Thorax dark brown, when denuded, clothed with silky dull golden narrow-curved scales, and with two lateral rows of black bristles, numerous black bristles over the roots of the wings ; scutellum pale brown (almost testaceous when denuded) with narrow-curved pale scales and dark brown border-bristles, six large ones to the mid lobe and a posterior row of several very fine hairs ; pleuræ slaty-grey and brown or bright brown with a few brown bristles and white scales. Metanotum deep brown. Abdomen narrow, cylindrical, slightly expanded apically and truncated, black, covered with black scales, the second to seventh segments with basal white bands, the scales rather more numerous in the middle of the segments, thus giving the bands a curved outline ; first segment testaceous with two median patches of dusky scales and numerous long brown hairs, apical segment black, bristly ; the antepenultimate segment rather expanded apically. Legs with pale brown coxæ and trochanters almost grey in some specimens, testaceous in others ; remainder of legs deep brown, almost black, with bristles on the tibiæ and metatarsi ; hind metatarsi about the same length as the hind tibiæ ; unguis very small, equal and simple. Wings with typical *Culex* scales ; scales brown ; fork-cells rather short ; the first sub-marginal cell longer and slightly narrower than the second posterior cell, its base just a little nearer the base of the wing than that of the second posterior cell or level with it ; its stem about half the length of the cell ; stem of the second posterior cell nearly two-thirds the length of the cell ; posterior cross-vein longer than the mid cross-vein, about twice its own length distant from the mid ; the scales on the sub-costal and first longitudinal are broader and denser than on the rest of the veins. Halteres with yellowish stem and fuscous knob.



Length, 4 to 4.3 mm.

♂. Palpi brown unbanded, the last two joints with scanty brown hairs on both sides, the two apical joints being darker than the remainder of the palpi; antennæ banded brown and white, with flaxen brown plumes; proboscis black, expanded apically; thorax as in the ♀; abdomen not so cylindrical as the ♀, slightly expanded apically, with six basal white bands as in the ♀, apical segment black; segments with pale brown hairs laterally; in certain lights the abdomen has a violet hue; apical segment truncated and bristly as in the ♀; posterior border-bristles rich brown, shorter in the middle than at the sides; genitalia with a spine-like process near the apex of the claspers; the lateral process of the basal lobe spined, with an apical tuft of bristles, a broad sword-like plate and two long chitinous processes curved at their apices. Legs dark brown to black unbanded; fore unguis unequal, the larger not very long, rather thick, uniserrated, curved; the smaller more or less straight, curved at the tip, with a small tooth towards its base; mid unguis very unequal, the larger curved, acute, simple, the smaller rather more than half its length, straighter, and with a very small tooth near the base; hind unguis very small, equal, sickle-shaped and simple.

Length, 4 to 4.5 mm.

This is a small brown biting mosquito, common in South Queensland in scrubby places, but never very plentiful; it can be recognised when alive at once by the position of the hindmost pair of legs, which are always cocked up and bent forwards as far as the head. When the specimens are dry, it much resembles starved *Culex fatigans*, and can only be separated by critical examination under the microscope. The larvæ are found in small collections of water in scrubs; they have a very long respiratory siphon. It oviposits in a small boat-shaped raft easily recognised by its small size from that of *Culex fatigans*.

*CULEX LINEALIS*.—*Skuse* (1888).

|                       |               |       |                  |
|-----------------------|---------------|-------|------------------|
| ♀. Length of antennæ, | 0.095 inch    | ..... | 2.39 millimetres |
| Expanse of wings,     | 0.160 x 0.045 | ....  | 4.06 x 1.13      |
| Size of body,         | 0.200 x 0.040 | ....  | 5.08 x 1.01.     |

Antennæ brown, about five-sixths the length of the proboscis; first joint of the scapus dull reddish-brown, with yellow scales. Head brown, densely covered with golden-yellow scales and hairs. Proboscis uniformly covered with violet-black scales, about six times the length of the palpi. Palpi uniformly covered with violet-black scales. Thorax brown, with four distinct lines of golden-yellow scales, and densely bordered laterally with golden-yellow scales; interstices of the lines bare or nearly so; two median lines running parallel, and

rather close together, from the anterior border for two-thirds the length of the thorax, at this point apparently coalescent, but proceeding to the scutellum in a slightly wider fork, the branches being parallel; the other two lines starting below the anterior border, running parallel and continuing to the scutellum, and lying somewhat nearer to the median lines than to the lateral border of scales; pleuræ brown, with a few somewhat indistinct patches of white scales and a small tuft of moderately long white hairs under the origin of the wings; scutellum brown, with two lines of golden-yellow scales, coalescent at the apex, and appearing as a continuation of the two median lines of the thorax; beset with long golden-yellow hairs; metanotum brown. Halteres ochre-yellow. Abdomen not quite twice the length of the thorax, superior segments covered with violet-black scales, each segment bordered anteriorly with a very narrow band of ochre-yellow; venter ochre-yellow, each segment bordered posteriorly with a moderately narrow band of violet-brown or violet black. Coxæ and femora ochre-yellow, the latter more or less covered along the upper side and at the tip with violet-black scales, the extreme apex of the femora ochre-yellow; tibiæ and tarsi violet-black or violet-brown, the former with a more or less distinct line of ochre-yellow on the sides and slightly ochre-yellow at the extreme apex, and the first two joints of the tarsi very slightly and indistinctly ochre-yellow at the base. In the hind-legs the tibiæ about one-third longer than the metatarsi. Wings longer than the abdomen, hyaline, the veins densely covered with violet-brown scales. Auxiliary vein joining the costa opposite the middle cross-vein and a little before the tip of the posterior branch of the fork of the fifth longitudinal; middle cross-vein rather indistinct, longer than the posterior cross-vein situated beyond it a distance twice the length of the latter; first sub-marginal cell scarcely longer than the second posterior cell, considerably narrower, its base lying a short distance beyond that of the latter; anterior branch of the fifth longitudinal vein originating opposite a point mid-way between the origin of the second longitudinal vein and the tip of the sixth longitudinal, reaching the posterior border opposite the middle of the second posterior cell.

Habitat: Knapsack Gully, Blue Mountains; Hexham and Wheeny Creek, N.S.W. (Skuse), October and January; Enoggera, South Queensland (Bancroft).

This is a rather uncommon species, biting in scrubby places on Kedron Brook, Enoggera. Specimens were submitted to Mr. Theobald, who is of opinion, that they are examples of Skuse's *Culex linealis*; although the two median golden-scaled lines on the thorax do not meet in the middle, as described by Skuse; in every other particular the description tallies. Mr. Theobald suggests that a specimen be compared with Skuse's type in Sydney.



It oviposits in confinement, the eggs being laid in a raft; I succeeded in hatching out a number, but for some mysterious reason the larvæ died. The male of this species has not been seen.

### TÆNIORHYNCHUS —ARRIBALZAGA (1899)

Palpi long in the ♂, short in the ♀; the fifth joint in the ♀ minute, buried in scales; ♂ palpi longer than the proboscis, third joint long; head clothed with narrow-curved scales and upright forked ones; thorax and scutellum with narrow-curved scales; abdomen with flat scales; wings clothed with thick elongated scales, ending either diagonally and convexly, or more or less bluntly pointed, median linear scales to the veins often absent; legs usually spotted or banded; unguis of female equal and simple, of the male unequal in the fore and mid legs, the larger one with one or two teeth, the smaller simple, the hind claws also simple; wings with similar venation to *Culex*; the proboscis is usually banded.

### TÆNIORHYNCHUS ACER.—Walker.

♀. Head brown, with testaceous scales, a pale border round the eyes above, with some black and yellowish bristles; eyes black; basal joint of the antennæ yellowish, remainder brown; palpi dark yellowish-brown; proboscis covered with dark black scales with a very dark purplish reflection. Thorax golden-yellow, the front scales being very bright and metallic; scutellum bordered with long yellow bristles; metanotum testaceous, pleuræ pale testaceous, with some bright reflections and a dark area beneath the root of the wings. There are traces of brown markings on the thorax, which cannot be made out. The abdomen brilliant orange-yellow, the first four segments apically banded with metallic purple, the other segments showing traces of the metallic banding (probably rubbed), clothed with orange-yellow hairs, densely so at the apex, venter similarly marked to the dorsum. Wings testaceous at the base, veins densely clothed with longish brown scales, costa and first longitudinal very dark brown scaled; base of the second posterior cell nearer the base of the wing than the base of first sub-marginal cell. Halteres testaceous with dusky knob. Legs with coxæ orange-yellow, femora orange-yellow at the base, apically metallic black, rest of legs clothed with metallic black scales showing purplish and slight golden reflections—general appearance of legs dark metallic black.

Length, 5 mm.

♂. Head with pale greyish scales, a dark line running down the middle; palpi as long as the proboscis, dark brown at the tip, paler basally, with a small pale band about one-third of the length from the base; proboscis dark brown, slightly paler

towards the tip; antennæ banded brown and white, with yellowish-brown verticils. Thorax bright testaceous, with long bristles, dark in some lights, yellowish in others. Abdomen similar to female, but the apex and genitalia deep brown. Legs as in ♀, but the femora are darker. Wings rather paler.

Length, 5 to 5.5 mm.

"The Golden Mosquito," a biting species, coming into the house, common at times of the year only (January, February, March), but never plentiful; absent for long periods at a time; this mosquito was rarely seen at Burpengary; its breeding place has not been ascertained; it will live in confinement and will oviposit; the eggs are laid in a boat-shaped raft like those of *Culex fatigans*; a number once hatched out, but, unfortunately, the larvæ died when three days old from some unknown cause, from possibly the water getting too cold during the night. I tried salt water, but no eggs hatched out.

Theobald now proposes to place *Tæniorhynchus acer*, in Goeldi's new genus *Chrysoconops*.

#### CHRYSOCONOPS.—GOELDI (1905).

The head, thorax and abdomen scaled as in *Culex*. Colours golden-yellow and metallic violet. Large species. Male palpi long, acuminate, dense hair-tufts. Male genitalia with short basal lobes and broad claspers with short acuminate terminal segment, harpogones stout and curved with thick spines. The wing scales dense and *Tæniorhynchus*-like, but the majority end asymmetrically.

#### MANSONIA.—BLANCHARD (1901).

Palpi short in the ♀, long in the ♂, in the latter with hair tufts, four-jointed in the ♀ and ♂; in the ♀ the first joint is small, the third long, the fourth small and nipple-like. Head clothed with narrow-curved and long upright forked scales; thorax with thin hair-like curved scales and numerous bristles; scutellum with similar squamæ; abdomen with flat scales with very convex apices. The abdomen of the ♀ is usually blunt, and the penultimate segment may have a row of short thick spines. Wings densely scaled along the veins with broad asymmetrical flat scales on each side of the veins only, no median scales, and also in some cases with long lateral clavate scales; fork of the second posterior cell usually nearer the base of the wing than that of the first sub-marginal cell. Legs usually more or less mottled and banded with white; unguis of the ♀ equal and simple, of the ♂ unequal, the larger one toothed, the smaller simple.

#### MANSONIA UNIFORMIS.—Theobald (1901).

♀. Head purplish-brown, with curved white scales and black upright forked ones, slightly ochraceous at the sides; eyes purple and white, with a border of white scales; antennæ

brown, basal joint bright yellowish, and also the base of the next joint, remainder faintly banded; palpi yellowish, with a few blackish scales; proboscis ochraceous, with a broad black band near the apex, tip yellowish, and a few black scales at the base. Thorax brown, with a purplish-brown tinge, covered with golden-brown scales in the centre, more or less arranged in rows, on each side a broad stripe of whitish scales, a patch of similarly coloured ones posteriorly; sides of the mesonotum with golden scales, and on each side, towards the scutellum, a large roundish bare dark spot (this does not always appear prominently); scutellum chestnut-brown with purplish-brown reflections, with scattered white scales and a border of bright brown bristles, seven bristles on the mid lobe and five on each side; metanotum brown; pleuræ with two patches of white scales. Abdomen covered with dark purplish-brown scales, with patches of white and yellow scales laterally, the white on the posterior border of the segments; a few ochraceous patches on the dorsum; posterior borders paler, with golden hairs, the last few segments when denuded testaceous; venter with white and ochraceous scales on a dark ground. Legs with the femora yellowish, mottled with dark scales and patches of white, no distinct banding; anterior tibiæ dark in front, with about seven white spots; posterior tibiæ with five white and six dark bars in front, yellowish beneath; metatarsi of all the legs pale at the base and banded white in the middle; the first two tarsal joints of the fore and mid legs basally white; all basally banded in the hind legs; ungues simple. Wings mottled with dusky and pale creamy broad scales; posterior border with dark and light basal scales; border scales small; fringe dark; posterior cross-vein about twice its own length distant from the mid cross-vein; the base of the fork of the second posterior cell slightly nearer the base of the wing than that of the first sub-marginal; the cells of about equal width, the latter slightly the longer. Halteres with a pale stem and dark knob.

Length, 4.5 to 5 mm.

Habitat: Travancore, S. India (S. P. James); Taiping, Perak (Wray); South Queensland (Bancroft); Central Africa (Moffatt, Gray and others); Lagos (Strachan); Ceylon (E. E. Green); Algeria (Chaudoye); Natal (Moir). One of the most abundant Central African Culices, occurring in numbers around the Albert and Victoria Nyanzas. It is the most common form at Entebbe and along the lake-shore in Uganda and Busoga, writes Dr. Low. It occurs in swamp and forest, and according to Dr. Moffatt, bites there severely. In Natal it is most troublesome during rains (Moir).

New localities: Philippine Islands (Miss Ludlow); New Guinea (Biró); Ivory Coast (Blanchard and Dye); Madagascar, (Ventrillon and Blanchard).



This is the brown mosquito, common but never plentiful in the vicinity of swamps and creeks on Moreton Bay; a large insect but smaller than *Mucidus alternans*, the "Scotch Grey," with which it is associated; it is met with in open forest country, and not in scrub or jungle; at times and often for long periods it is very scarce. The eggs, larvæ and males have never been met with. Several attempts to keep them in confinement with the hope that they would oviposit ended in failure; they are of a wild nature and do not live long when caged. It is a very handsome insect under the microscope; the wing scales being especially beautiful.

#### FINLAYA.—THEOBALD (1903).

Head clothed with flat scales, broad curved scales and numerous narrow upright forked ones, and long forwardly-projecting bristles; the broad curved scales border the eyes, and form a median line; the flat scales not so closely applied as in *Stegomyia*. Eyes with facets very large and pronounced; antennæ with the basal and second joint scaly, fifteen jointed in the ♀; palpi densely scaly, apparently four-jointed. Mesothorax with narrow-curved scales; prothoracic lobes with flat scales; scutellum with flat scales and a basal row of narrow-curved ones. Abdomen densely clothed with flat scales, the apical segments with ventral scaly tufts. Legs with the femora with rather prominent scaly tufts; unguis equal and simple. Wings spotted with light and dark scales; scales large and broad, more or less pyriform in shape.

#### FINLAYA POICILIA.—*Theobald* (1903).

♀. Head black, covered at the sides and on the occiput with flat black scales grey at the sides, the central area with broad silvery grey scales and the eyes bordered with the same, a few upright black narrow forked scales dotted over the occiput. Antennæ dark brown, basal joint with silvery white scales on the inside, the second joint densely clothed with black scales; palpi prominent, deep black, with silvery white scales at the apex; proboscis black, with a clear white band at the base of the apical half and a trace of white banding at the apex. Mesothorax black, with narrow-curved dull grey and white scales, and patches of flat, silvery white scales at the sides in front of the wings; prothoracic lobes covered with flat white scales; scutellum covered with flat, rather pyriform black and white scales on the middle lobe and with black ones on the lateral lobes, the base of the scutellum with silvery white narrow-curved scales, median lobe with four border-bristles; pleuræ blackish-brown to almost black, with silvery white puncta. Abdomen black, each segment with two median white spots, the last two segments mainly grey scaled; there are also median white



lateral spots ; the apical segments with three prominent ventral tufts of black scales. Legs black, the femora with five snow-white bands, the tibiæ with six similar bands, metatarsi apically and basally white banded and with a median white band ; the first fore tarsus apically white, next two black, last pure white ; in the mid legs the same ; in the hind legs two tarsi with white bands, the last pure white ; ungues small, equal and simple. Wings clothed with large, broad, pyriform, black and white scales, the costal with two small apical, then two large and then another small white spot ; the veins mostly covered with black scales, but with white areas as follows : At the base of the fork cells, small areas on their branches, four on the third long vein ; two on the upper, two on the lower branch of the fifth, and three on the stem, the basal portion being white ; four small white areas on the sixth ; fringe black, with white spots where the veins join the border ; border-scales all black ; first sub-marginal cell a little longer, but about the same width as the second posterior cell ; bases of the two fork-cells about level, stem of the first sub-marginal not quite as long as the cell, stem of the second posterior as long as the cell ; posterior cross-vein nearly four times its own length distant from the mid cross-vein. Halteres black.

Length, 4.5 mm.

Habitat : Penang (Freer) ; The Johnstone River, North Queensland (A. Owen Jones and Edgar H. Webb) ; Kedron Brook, S. Queensland (Bancroft) ; New Guinea (Birò).

This is a small biting mosquito common at the Johnstone River ; rare in the vicinity of Brisbane. It can be told at sight by the banded legs and proboscis and variegated wings ; the only mosquito it resembles are starved specimens of *Scutomyia notoscripta*, with which it is associated in scrubs.

Nothing is at present known of the life-history.

#### SKUSEA.—THEOBALD (1903).

Head with flat scales all over ; scutellar scales narrow and curved. Metanotum nude. Branches of the first sub-marginal cell with denser scales than the rest of the veins, thick, like those of *Verrallina*, also those on the branches of the second fork-cell and its stem ; scales on the basal areas of the veins thick. Palpi of the ♀ three-jointed, longer than in *Verrallina*. Scutellum with six border-bristles to the mid lobe. Male palpi short composed of three segments, the apical one small and nipple-like. The second segment of the antennæ slightly swollen, plumose. Genitalia with short, thick, blunt claspers ; basal lobes broad and short, a large median semi-circular process between them at the base and two sword-like harpes, curved at the base.

SKUSEA FUNEREA.—*Theobald* (1903).

♀. Head covered with flat black scales, with violet reflections; palpi, clypeus and proboscis black, palpi short, scaly and bristly; antennæ dark brown, basal joint dark, nude, second joint testaceous at the base. Thorax black, with long curved hair-like bronzy scales and numerous black bristles, which are dense over the roots of the wings; there are also median and lateral rows on the mesothorax; scutellum dark brown, with narrow, pale, dull golden curved scales and numerous dark border bristles; metanotum black; pleuræ black, bristly, with patches of white scales, three prominent. Abdomen with peculiar ornamentation, deep brown, banded with black and white; first segment entirely deep brown, with violet reflections, second segment deep brown, a few white scales in the middle close to the base, but not basal, lateral white spots not quite basal; in the third, fourth, fifth and sixth segments the bases are banded with darker brown, almost black, and then follows an irregular white band, which spreads out laterally to form distinct lateral white spots, seventh segment with lateral white spots only, apex black; the whole abdomen shows violet reflections in some lights; posterior border-bristles pale dusky brown; venter also with white bands on the basal half of the segments. Legs dark brown to black, coxæ and bases and venter of femora pale; fore, mid and hind ungues equal and simple, the fore rather straighter than the mid; legs rather bristly, femora somewhat enlarged. Wings with veins brown scaled, the upper border dark, slightly smoky; fork-cells rather short; first sub-marginal cell longer, but no narrower than the second posterior cell, its base a little nearer the base of the wing, its stem about half the length of the cell; stem of the second posterior cell about as long as the cell; posterior cross-vein from one to one and a-half times its own length distant from the mid cross-vein. Halteres with pale stem and fuscous knob.

Length, 4 mm.

Habitat: South Queensland (Bancroft); New Guinea (Biró).

This is a small very black mosquito found biting in Mrs. Bell's scrub at Deception Bay; present throughout the year but always rather uncommon; it oviposits in confinement; the eggs are laid singly; they are very long, narrow oval in shape, black with a pattern. As a rule, they were not fertile, several once hatched out but unfortunately, for some reason or other, the larvæ died when a day or so old.

## URANOTÆNIA.—ARRIBALZAGA (1889).

Closely related to *Ædes*, but usually more brilliantly coloured and stouter in form.

Palpi two-jointed, short in both male and female. Head clothed with flat scales, forked upright ones may or may not be present; antennæ fourteen-jointed, pilose in the female, plumose

in the male ; proboscis swollen at the apex, with hairs along the apical portion, especially prevalent in the male. Thorax clothed with narrow-curved scales, and rows and patches of flat scales ; scutellum with flat scales on the mid or lateral lobes, or both. Abdomen densely clothed with flat scales, either banded or unbanded. Wings with very small fork-cells, with the veins clothed with single or double rows of small broad equilateral scales, abruptly truncated and with lateral clavate or elliptical scales to some of the veins ; on the roots of the wings are usually some flat scales of more or less brilliant hue ; costal borders with lanceolate scales projecting from the edge ; first sub-marginal cell small, smaller than the second posterior cell, its base considerably near the apex of the wing than the base of the latter cell, its stem long, and its upper branch more or less closely applied to the first longitudinal vein ; the sixth long vein curves at the apex, and the incrossation in the anal cell is distinct, almost appearing as a true vein. The ungues of the female are simple and equal, whilst those of the male are unequal on the fore and mid legs.

Dr. Lutz, of Brazil, says the larvæ are like *Anopheles*, but lie slightly obliquely in the water ; they are often brilliantly coloured red, blue and green, and have a short respiratory tube.

URANOTÆNIA PYGMÆA.—*Theobald* (1901).

♀. Head dark brown, with broad flat scales, black in the middle, and with a few black upright forked ones and flat white ones in front, forming a very distinct white broad border to the eyes, which widens out laterally, forming a pale violet-coloured patch on each side ; two black bristles project forwards from between the eyes and others are placed laterally ; eyes black ; antennæ brown, basal joint deep ferruginous in some lights, brown in others, base of the second joint also ferruginous ; palpi very short, black ; proboscis dark brown, nearly as long as the body, expanded apically, hairy. Thorax black, covered with narrow shiny pale bronzy scales and black bristles ; a distinct line of flat brilliant silvery-white scales in front of the wings, on each side ; also a small silvery-white patch on each prothoracic lobe, and others on the pleuræ ; scutellum almost black in some lights, testaceous at the sides in others ; metanotum dark reddish-brown ; pleuræ brown, spotted with white ; in some lights the thorax looks deep umber-brown under a hand-lens. Abdomen clothed with dusky-brown scales, with dull violet reflections, pale cream-coloured bands along the apical borders, giving the abdomen a distinctly banded appearance, apical borders of the segments with brownish-golden hairs (in some specimens this banding is not at all distinct) ; venter covered with grey scales ; in some specimens there are pale apical patches on the sides, but not in all. Legs covered with purplish-black scales ; coxæ bases and ventral surfaces of the



femora pallid, grey scaled: hind legs with a faint knee spot; the whole legs have a bronzy appearance in certain lights. Wings with the veins covered with purplish-black scales, except the base of the fifth longitudinal vein, which is covered with silvery-white scales, forming a characteristic silvery line at the base of the wing; wings iridescent; first sub-marginal cell very small, both shorter and narrower than the second posterior cell, its stem more than twice the length of the cell; second posterior cell broad, its base nearer the base of the wing than that of the first sub-marginal cell; posterior cross-vein nearly twice its own length distant from the mid cross-vein, both very pale; veins with a row of small dark scales; the apical portions of the second to fourth long veins with lateral spindle-shaped ones. Halteres with a pale stem and fuscous knob.

Length, 2 mm.

This is a beautiful little mosquito, found resting just above the water line in casks and water-butts, especially when nearly empty. I found them at Deception Bay, at Burpengary and Enoggera. It does not bite man, but evidently bites birds, for I have taken them gorged with avian blood. It is rather rare, but present throughout the year. It oviposits in a small black raft; the upper ends of the eggs are studded with papillæ; to the naked eye, the raft looks like that of *Culex cylindricus*, and also like a small piece of that of *Culex tigripes*, with which mosquitoes this insect is associated; the eggs can be easily distinguished upon examination under a low power of the microscope. The larvæ to the naked eye, resemble *Anopheles* and feed on the surface on Algae and Diatoms; examined microscopically, they are seen to have a respiratory siphon and other characteristics; they thrive badly for some unknown reason, only a few reaching the stage of pupation; only a few have been found in conjunction with other larvæ in casks: they do best in water an inch or so deep and with a mud bottom.

#### ANISOCHOLEOMYIA.—THEOBALD (1905).

Head clothed with flat scales rather loosely applied to the surface, and which form a more or less projecting mass between the eyes in front. Antennæ densely pilose in the male. Proboscis swollen apically. Palpi very short in both sexes. Thorax with narrow-curved scales in the middle, and with broad spindle-shaped ones around the front and sides; scutellum with small flat scales rather loosely applied, very distinctly trilobed. Wings ornamented. Ungues of male not very unequal in length, but differing in breadth, one on each leg broad and leaf-like. Fork-cells short as in *Uranotænia*. Closely related to *Uranotænia*, but differing in the non-plumose male antennæ and peculiar unguis, also in the absence of flat thoracic scales



and more rugged appearance of the head and scutellum. The genitalia cannot be made out, but the perfect specimens are evidently all three males.

ANISOCHOLEOMYIA NIVIPES.—*Theobald* (1905).

♂. Head brown, clothed with rather loosely applied creamy white flat scales; the antennæ deep brown, basal segment deep reddish-brown; clypeus brown; palpi clothed with deep brown scales and with a few long black chætæ; proboscis deep brown, with bronzy reflections, swollen apically, hairy. Thorax bright brown: the middle of the mesothorax with narrow-curved bronzy-brown scales and three rows of black chætæ, the dark scaled area surrounded by thicker creamy-white curved scales, forming a well contrasted whitish area, which is indented into the dark area on each side in front before the base of the wings; scutellum with small flat dark brown scales and black border-bristles, four to the mid lobe; metanotum bright chestnut-brown; pleuræ clothed with dense creamy-white scales continuous with the pale areas around the mesothorax. Abdomen deep brown, with deep brown scales and creamy-white scaled apical borders; the apical segment all pale scaled; border-bristles pale. Legs deep brown; coxæ and trochanters pale, last two and apex of the antepenultimate hind tarsals white; the fore and mid tarsals pale beneath; unguis unequal in size, but the posterior of nearly equal length, the larger fore and mid very broad and thick, the smaller abruptly curved basally. Wings ornamented; costa black and spiny; first long vein black-scaled with a large white area over the cross-veins, and a white apex; a dark area on the stem of the first sub-marginal cell and a small dark area beneath it on the third, most of the stem of the second fork-cell dark, also a dark area in the middle of the upper branch of the fifth and at the apex of the lower branch; the whole forming a dusky band across the otherwise pale-scaled wing; first sub-marginal cell about two-thirds the size of the second posterior cell, its stem twice as long as the cell; stem of the second posterior slightly longer than the cell; posterior cross-vein longer than the mid cross-vein, and nearly twice its own length distant from it, situated close to the base of the upper branch of the fifth vein. Lateral scales on the fork-cells and the third long vein large and lanceolate, a few very similar ones on the apex of the upper branch of the fifth; median vein scales small and dark on the fork-cells, third vein and middle of the upper branch of the fifth and the apex of the lower branch; those on the stem of the first fork-cell dark and some of almost etorleptomyian-form (*i.e.*, heart-shaped), but more elongate. Halteres with pale testaceous stem and fuscous knob.

Length, 2.5 mm.

Habitat: South Queensland (Bancroft).

Observations: Described from two perfect specimens; Dr. Bancroft states that they live in company with *Uranotænia pygmæa*; although very distinct they cannot be told from that species until boxed. An extremely rare mosquito found just before leaving Deception Bay in 1904, in a cask half-ful of water resting just above the water line.

## THE MALE GENITALIA.

Mr. Theobald in the Vol. IV. Monograph of Culicidæ, remarks as follows:—

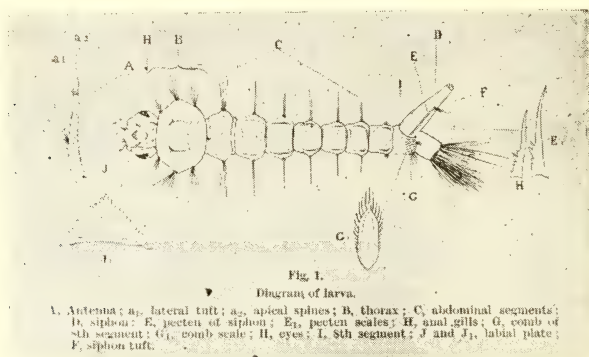
The prominence now given to the male genitalia makes it necessary to add a figure showing the different parts, that are



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important to notice. Roughly, the external genitalia consist of two "claspers," each of which has a large basal lobe [(bes,) and a variously shaped terminal clasp segment (tes), which folds over like the blade of a knife. At the apex of this is found a more or less developed spine (this may be absent in some species, double in others), which is thought by Professor Felt to be the rudiment of a ventral second segment analogous to the claspette (c) of the basal segment. The term claspette designates certain peculiar organs occurring on the ventral surface of the basal lobe, it may be represented by one or more spined tubercles

or by a conspicuous basal spined lobe and a longer acute one near the apex of the basal segment. The terminal segment varies very much in different forms, some being most striking appendages (*Dendromyia*, *Tæniorhynchus*, etc.) Between the clasps lie the harpes (h), normally forming the next largest structures, they arise from or near the base of the clasps, they are placed ventrally and sub-median. They are very diverse in form and in some groups are of two segments each. They are either very small or absent in *Ædeomyiinae*. The harpagones (hp) are a pair of small clamping organs lying above the harpes and within the base of the clasps. They are frequently strongly curved and terminated by a stout recurved hook. The unci consist of a pair of processes on the ventral margin and may be easily seen in *Culicinae*, but seem to be absent in *Anophelinae*. In certain groups (as *Chrysoconops*) they are stout and provided with a peculiar series of chitinous teeth. The setaceous lobes (sl) are part of the rudimentary eighth segment. They are in the form of chitinous lobes with a series of stout, chitinous spines.



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## LARVAL CHARACTERS.

The characters used for identifying the larvæ of *Anophelinae* made most use of are (i) the frontal hairs of the head; (ii) the structure of the antennæ; and (iii) the structure of the palmate hairs. In the *Culicinae* the chief characters of diagnostic value are (i) the form of the clypeus; (ii) the structure of the antennæ; (iii) the form of the siphon; and (iv) the number and structure of the spines forming the pecten on the siphon and on the so-called comb at its base.

Rain seems to be an incentive to many kinds of mosquitoes to oviposit; high spring tides for others, whilst putrefaction will induce others, *e.g.*, *Culex fatigans*, which species will oviposit at any time on liquid manure, putrid soap suds, etc.

Hitherto, the breeding places of some of the most important of our mosquitoes have not been located, and male specimens of quite a number are unknown, *e.g.*, *Pyretophorus atratipes*, *Myzorhynchus bancroftii*, *Mansonia uniformis*, *Grabhamia flavifrons*, etc.

Although thirty-two species have been described, and possibly there are another twenty species yet to be described, only four are present in such numbers as to constitute a nuisance; these four comprise the two introduced species, viz., *Culex fatigans* and *Stegomyia fasciata*, and the two bush-mosquitoes, *Culex vigilax* and *Culex annulirostris*. By the exercise of a little ingenuity, the numbers of these four species might easily be reduced very considerably.

The "House" and "Tiger" mosquitoes breed about habitations; the larvæ are found in tanks, which are not protected in a proper manner; the old idea of fixing a metal funnel to the manhole inlet is a bad one, for when made of galvanised-iron, holes are punched into it so large as to allow of the entrance of mosquitoes, and when made of perforated zinc, rotten leaves and the dung of pigeons and frogs collecting at the apex, cause corrosion or oxidation of the zinc, and in a few months a hole results, large enough for even frogs to enter. To obviate this, a flat sheet of perforated zinc should be placed over the man-hole, and kept in position by being soldered on in a few places. The spout from the roof, if entering at an angle, should be made to impinge at the edge; there will be no loss of water, as is generally supposed; the writer has used this system for twenty years and found it most satisfactory; leaves and bird dung, etc., are prevented from entering the tank, and soon get dry, and mostly blown off by the wind, or can be swept off.

There should be an elbow fitted to the over-flow, as then no direct light could enter the tank; the holes punched into the tank to constitute the overflow are large, and mosquitoes can enter easily, but the elbow effectively prevents them.

Troughs of water for animals should be emptied out at least once a fortnight, and any stagnant water about should be drained; if that cannot be done, a little kerosene applied once a fortnight would kill the larvæ before they hatched into mosquitoes; the "House Mosquito" often breeds in cesspits; a cupful of kerosene once a fortnight would effectively prevent it doing so.

The two bush-mosquitoes breed for the most part in pools of sea water, that have been left after spring tides; drains should



be made to allow the water to get away ; if that cannot be done, kerosene applied a few days before the spring tides, would destroy all the larvæ ; if mosquitoes were found breeding in ponds, a few small fish, *e.g.*, Eleotris, Gobies or even Gold Carp introduced into them would devour the larvæ.



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ISSUED 14 OCTOBER, 1908.

ANNALS  
OF THE  
QUEENSLAND MUSEUM.  
No. 9.

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Part i.

NEW OR LITTLE KNOWN FISHES IN THE  
QUEENSLAND MUSEUM.

BY

J. DOUGLAS OGILBY.

Part ii.

REVISION OF THE BATRACHOIDIDÆ OF  
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# NEW OR LITTLE KNOWN FISHES IN THE QUEENSLAND MUSEUM.

By J. Douglas Ogilby.



IN the following paper will be found descriptions of four genera and sixteen species of fishes, all of which—with the exception of *Ostichthys australis* (Castelnau)—are considered to be new to science. Excluding *Anyperistius*, which is founded on a New Guinea plotosid, *Sphyræna waitii*, hitherto only recorded from the New South Wales Coast, *Ostichthys spiniceps* from the South Seas, and *Holocentrus angustifrons* from New Britain, all these genera and species belong to the Queensland fauna.

The proposed new genera are as follows—

- i. NEMAPTERYX; fam. *Siluridæ*; type *Arius stirlingi* Ogilby, Proc. Linn. Soc. N. S. Wales, xxiii, 9. xii. 1898, p. 281.\*
- ii. ANYPERISTIUS; † fam. *Plotosidæ*; type *A. perugiæ* Ogilby, nom. nov. for *Eumeda elongata* Perugia, Ann. Mus. Genov., (2) xiv, 1894, p. 552, not of Castelnau, Proc. Linn. Soc. N. S. Wales, iii, 1878, p. 144, which is *Neosilurus hyrtlîi* juv.
- iii. JENYNSELLA; fam. *Aplochitonidæ*; type *J. weatherilli*; v. infra.
- iv. SQUALOMUGIL; fam. *Mugilidæ*; type *Mugil nasutus* de Vis, Proc. Linn. Soc. N. S. Wales, vii, 1882, p. 621 (iv. 1883).

The species described below are as follows—

1. TACHYSURUS BROADBENTI; fam. *Siluridæ*; Cape York, N.Q.
2. NEOSILURUS MEDIOBARBIS; fam. *Plotosidæ*; loc. ign.
3. NEOSILURUS ROBUSTUS; fam. ead.; Keppel Bay, S.Q. ? *Neosilurus hyrtlîi* x *Tandanus tandanus*.
4. JENYNSELLA WEATHERILLI; fam. *Aplochitonidæ*; Enoggera Creek, Brisbane, S.Q.

---

\* The type specimen is from the Adelaide River, Northern Territory, but there is a small example from North-Eastern Queensland in the State Museum.

† Boulenger (B. M. Catal. Fish., ed. 2, i, p. 269) has altered the orthography of Günther's name *Anyperodon* to *Anhyperodon*; this is unnecessary, if not absolutely incorrect, as the word is formed like similar Greek compound words, such for instance as *ἀννέριβας*.



5. CORYTHOICHTHYS SPINICAUDATUS; fam. *Syngnathidæ*; Cape York, N.Q.
6. HIPPOCAMPUS DAHLI; fam. *Hippocampidæ*; Moreton Bay, S.Q.
7. MUGIL STEVENSI; fam. *Mugilidæ*; Rockingham Bay, N.Q.
8. MUGIL NORTONI; fam. ead.; Eastern Australia.
9. MUGIL TADOPSIS; fam. ead.; Moreton Bay, S.Q.
10. SPHYRÆNA WAITII; fam. *Sphyrænidæ*; Port Jackson, N.S.W.
11. OSTICHTHYS AUSTRALIS = *Myripristes australis* Castelnau; fam. *Holocentridæ*; Cape York, N.Q.
12. OSTICHTHYS SPINICEPS; fam. ead.; South Sea Islands.
13. HOLOCENTRUS ANGUSTIFRONS; fam. ead.; New Britain.
14. PSEUDOCCHROMIS WILDII; fam. *Pseudochromididæ*; Moreton Bay, S.Q.
15. DAMPIERIA LONGIPINNIS; fam. ead.; Coast of Queensland.
16. CALLIONYMUS LIMICEPS; fam. *Callionymidæ*; Moreton Bay, S.Q.

The following fifteen species are, it is believed, here recorded for the first time from Queensland waters—

1. STEGOSTOMA TIGRINUM (Gmelin), Syst. Nat., p. 1493, 1788; fam. *Orectolobidæ*. Specimens are in the Museum from Cape York and Normanton. This shark occurs as a straggler as far south as Port Jackson.
2. ORECTOLOBUS DASYPOGON (Bleeker), Arch. Néerl., 1867, p. 400; fam. *Orectolobidæ*. Occurs at Dunk Island.
3. SPHYRNA TUDES (Cuvier MS.—Valenciennes), Mém. Mus., ix, 1822, p. 225; fam. *Sphyrnidæ*. This is the common "hammerhead" of Moreton Bay, from whence I have seen several specimens. I have also handled one from the Tweed Heads, which entitles the species to inclusion in the fauna of New South Wales. Not hitherto recorded from Australia.
4. SPHYRNA BLOCHII (Cuvier MS.—Valenciennes), Mém. Mus. ix, 1822, p. 227; fam. ead. The Museum possesses a couple of fetal examples of this unmistakeable shark taken from a female killed in Rockingham Bay. A new record for Australia.
5. PRISTIS ZEPHYREUS Jordan & Starks, Fishes of Sinaloa, p. 383, 1895; fam. *Pristidæ*. A pair of rostra from the Queensland Coast in the State Museum appear to agree more nearly with this species than with the typical *P. perrotteti*, the only other form with which it could be confounded. A new Australian record.

6. RHINA ANCYLOSTOMA Schneider, Syst. Ichth., p. 352, 1801; fam. *Rhinobatidæ*. A specimen of this fine guitar-fish was captured some years ago in Moreton Bay, and forms now a part of the mounted collection in the State Museum. This is also an Australian record.
7. RHYNCHOBATUS DJIDDENSIS (Forskål), Descr. Anim., p. 18, 1775; fam. ead. Not uncommon on our coast.
8. PTEROPLATEA AUSTRALIS Ramsay & Ogilby, Proc. Linn. Soc. N. S. Wales, x, 1885, p. 575 (3. iv. 1886); fam. *Dasyatidæ*. Not uncommon in Moreton Bay.
9. STOLEPHORUS ROBUSTUS (Ogilby), Proc. Linn. Soc. N. S. Wales, xxii, 17. ix. 1897, p. 64; fam. *Clupeidæ*. Visits Southport in large shoals during the colder months.
10. HYPERLOPHUS COPII Ogilby, *ibid.*, p. 72; fam. ead. Same as preceding.
11. EXONAUTES OXYCEPHALUS (Bleeker), Nat. Tijds. Ned. Ind., iii, 1852, p. 771; fam. *Exocætidæ*. There is a fine example of this species in the State Museum from Torres' Straits, thus entitling it to a place in our fauna and that of the Commonwealth.
12. CYPsilURUS MELANOCERCUS (Ogilby), Proc. Linn. Soc. N. S. Wales, x, 4. vi. 1885, p. 123; fam. ead. Occurs in Moreton Bay.
13. ICHTHYOCAMPUS CINCTUS (Ramsay), Proc. Linn. Soc. N. S. Wales, vii, 23. v. 1882, p. 111; fam. *Syngnathidæ*. There is a single specimen from Moreton Bay in the State Museum.
14. LUTIANUS GIBBUS (Forskål), Descr. Anim., p. 46, 1775; fam. *Lutianidæ*. There is a fine specimen in the State Museum from the "Torres Group," thus constituting an addition to the fauna of Queensland and Australia.
15. DACTYLOPUS\* DACTYLOPUS (Cuvier & Valenciennes), Hist. Nat. Poiss., xii, p. 310, 1837; fam. *Callionymidæ*. Not uncommon in Moreton Bay. Also an addition to the Australian fauna.

The following new names are proposed as substitutes for others held to be wrongly employed—

1. ANYPERISTIUS PERUGLE for *Eumeda elongata* Perugia; not of Castelnau (v. supra).
2. MUGIL ALCOCKI for *M. subviridis* Günther; not of Cuvier & Valenciennes.

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\* Günther (B.M. Catal. Fish., iii, p. 151) states in a footnote that this name is "preoccupied." On consulting Scudder's "Nomenclator Zoologicus" I find that Gill's *Dactylopus* (1859) has the precedence by three years over Claus in *Crustacea*. *Dactylopius* Costa (about 1841), proposed for a genus of *Hemiptera*, does not interfere with *Dactylopus*, and probably is not even from the same root. *Vulsus* Gunther, is therefore unnecessary.

Finally a key is given to the species of *Neosilurus* Steindachner, and the full synonymy of the East Australian fresh-water mullet, *Trachystoma petardi* (Castelnau).

Of the fifteen species described below as new the most interesting is undoubtedly the little aplochitonid to which I have given the name *Jenynseila weatherilli*. The small family *Aplochitonidæ*, containing three (perhaps four) genera and seven species, was formed by Günther\* in 1864 to accommodate three species of fishes, namely—*Aplochiton zebra* Jenyns,† from Tierra del Fuego and the Falkland Islands—*A. tæniatus* Jenyns,‡ from Tierra del Fuego—and *Protoctes maræna* Günther, from “Southern Australia.”§ To these the same author subsequently added *P. oxyrhynchus*|| from New Zealand. In 1882 Johnston¶ announced the discovery of a second Tasmanian aplochitonid from the Derwent River, to which he gave the name *Haplochiton sealii*, while in 1895 Weber\*\* described as *Protoctes semoni* a species from the upper waters of the Burnett River, Queensland. To these six must now be added the interesting species described below. While there is nothing remarkable in finding a genus closely allied to *Aplochiton* inhabiting the rivers of Southern Tasmania, seeing that in distribution and habits the family closely resembles the *Galaxiidae*, it is distinctly perplexing to find the same genus resident in the low-lying coastal creeks of Southern Queensland, where the water is warm throughout the year. As among the galaxiids there are two well defined groups, the one with ornamental markings and containing the larger and stouter forms which grow to an edible size—*Galaxias* proper, with *truttaceus*, etc.—the other small and slender of uniform or nearly uniform coloration—*Austrocobitis*,†† with *attenuatus*, etc.—so in *Aplochiton* the same process is repeated on precisely analogous lines, *Aplochiton zebra*—which “is ornamented with irregular, transverse, zebra-like bands,” grows to over a foot long, and “is good eating”—representing the *Galaxias* group, while *A. tæniatus*, *Jenynsellia weatherilli*, and *J. (?) sealii* similarly represent the *Austrocobitis* group. The

\* B.M. Catal. Fish., v, p. 381.

† Jenyns, Voy. Beagle, iv, p. 131, pl. xxiv, fig. 1, 1842.

‡ Ibid., p. 132, fig. 2.

§ The species is found in South-eastern Australia and Tasmania only.

|| Günther, Proc. Zool. Soc., 1870, p. 152.

¶ Proc. Roy. Soc. Tas., 1882, p. 128.

\*\* In Semon, Zool. Forsch., v, p. 274.

†† Ogilby, Proc. Linn. Soc. N.S. Wales, xxiv, 8. viii. 1899, p. 158. Tate Regan in his excellent “Revision of the Fishes of the Family *Galaxiidae*” (Proc. Zool. Soc., 1905, pp. 363 to 384, pll. x to xiii) disallows, I think wrongly, even subgeneric rank to this group.

coloration of *A. tæniatus* as given by Jenyns\* is equally applicable to the two Australian species. There are, however, several differences, both of structure and habits, which can not be ignored between the American and the scaleless Australian members of the family. In the former the rayed dorsal fin is inserted close behind the ventrals and wholly in advance of the anal, the adipose fin is opposite to the anal; the pectoral is large, pointed, and asymmetrical, with 18 rays, the upper the longest, and inserted well up the side with a vertical base; and both species are inhabitants of fresh water only, Darwin, in his notes stating of *A. tæniatus* that "when put into salt water they immediately died."† In the Queensland‡ species on the contrary the rayed dorsal is inserted mostly above, the adipose dorsal well behind the anal fin; the pectoral is small, rounded, and symmetrical, with 9 to 12 rays, the middle the longest, inserted almost on the ventral edge with a subhorizontal base, and both the Australian species are anadromous. In one character *A. tæniatus* approaches *J. weatherilli*, namely—in both these species the ventral fins are inserted much nearer to the tip of the snout than to the base of the caudal, while in *A. zebra* it is midway between these points. Of *Aplochiton sealii* we learn from its discoverer that it "has the same migratory habits as *Retropinna richardsonii*" (= *Retropinna retropinna*), that "it appears in the upper waters of the Derwent in large shoals during the months of October and November" and that "the females are then in mature ova," thus proving that they are true anadromous fishes, running up at a fixed season from the estuaries into the fresh water for the purpose of depositing their spawn. Our single example was taken in August, a season which, presuming, as is most probable, that it also is anadromous, would correspond in temperature with the Tasmanian October.

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\* "Uniform greenish or olivaceous brown, the back and sides very minutely dotted with darker brown. There is a pale silvery band along the middle of the side, not bounded, however, by any definable line, but shading off insensibly into the brown above and below."

† Jenyns, *ibid.*, p. 133.

‡ I only know *Aplochiton sealii* from Johnston's description, and as that author omits all reference to the position and shape of the fins, with the exception of the rather ambiguous statement "Dorsal situated rather in advance of vent and behind ventral fin," we are left in doubt as to whether the affinities of the species are with *Aplochiton* or *Jenynsellia*; the small pauciradiate pectorals, however, agree with the latter, while if for "situated" in the above quotation we were to read "originating," all doubt as to its generic identity with *Jenynsellia* would be set at rest.



## SILURIDÆ.

## TACHYSURUS BROADBENTI sp. nov.

## BROADBENT'S SEA-CATFISH.

D. i 7; A. 17. Depth of body  $4\frac{1}{2}$  to  $4\frac{3}{4}$ , length of head  $2\frac{4}{5}$  to 3 in the total length; width of head  $1\frac{3}{5}$  to  $1\frac{3}{4}$  in its length, the upper profile undulating and but little oblique. Diameter of eye  $6\frac{3}{4}$  to 7 in the length of the head and  $2\frac{1}{2}$  to  $2\frac{3}{5}$  in that of the snout, which is broadly rounded or subtruncate and  $1\frac{1}{6}$  to  $1\frac{1}{4}$  time as wide as long. Interorbital region convex, its width  $1\frac{1}{5}$  to  $1\frac{1}{3}$  time that of the mouth and 2 to  $2\frac{1}{3}$  in the length of the head. Premaxillary teeth in a continuous band, which is more or less emarginate behind, somewhat obtusely pointed at the extremities, and from  $4\frac{1}{4}$  to 5 times as wide as long; vomerine groups very small and widely separated, deciduous with age; palatine teeth in two large, approximate, subovate groups, the inner borders of which are nearly parallel; each group is about twice as long as wide, and fully its own length from the premaxillary band; mandibular teeth in two short, widely separated, biserial or triserial bands. Maxillary barbel  $1\frac{1}{2}$  to  $1\frac{3}{5}$  in the length of the head, extending horizontally nearly to, to, or a little beyond the hinder border of the opercle; postmental barbel  $\frac{3}{4}$  to  $\frac{5}{7}$  of the maxillary barbel, inserted near to and but little behind the mental, which does not reach to the gill-opening. Cranial shield sparsely granulated, sometimes nearly smooth, the granulation not extending forward on the interorbital region nor downward to the gill-opening. Nuchal shield subtriangular, rather strongly keeled, coarsely granular, the granules disposed in regular series, which diverge posteriorly, its greatest width  $2\frac{1}{2}$  to 3 in its length, which is 3 to  $3\frac{1}{5}$  in its distance from the tip of the snout; outer border nearly straight, the hinder notched. Dorsal buckler moderate, suberescentic, coarsely granular, its mesial length  $5\frac{1}{2}$  to  $6\frac{1}{4}$  in the nuchal shield, with which it is in contact. Fontanelle long and narrow, conspicuous; occipital groove not extending backwards to the nuchal shield. Opercles smooth. Humeral process smooth, well developed, broadly triangular, extending along the proximal  $\frac{4}{5}$  to  $\frac{3}{7}$  of the pectoral spine. Distance of dorsal fin from the tip of the snout  $2\frac{1}{10}$  to  $2\frac{1}{5}$  in the total length; dorsal spine, granular in front, very feebly serrated behind, the sides striated; its length  $1\frac{1}{2}$  to  $1\frac{3}{4}$  in that of the head. Adipose fin much higher than long, its base  $2\frac{1}{2}$  to  $2\frac{4}{5}$  in that of the rayed dorsal, its distance from which is  $3\frac{1}{5}$  to  $3\frac{1}{2}$  in the total length. Anal fin as high as or slightly higher than long, with the outer border feebly emarginate, its length  $2\frac{3}{5}$  to 3 in that of the head. Upper caudal

lobe shorter than the head,  $3\frac{1}{3}$  to  $3\frac{2}{5}$  in the total length; least depth of caudal peduncle  $\frac{2}{5}$  to  $\frac{5}{8}$  of its length behind the adipose fin. Pectoral fin with 11 soft rays; the spine similar to that of the dorsal but stronger and more strongly serrated behind,  $1\frac{3}{5}$  to  $1\frac{3}{4}$  in the length of the head. Ventral fin obtusely pointed, its length 2 in that of the head, not quite reaching to the anal fin. Vent nearer to the ventral fins than to the anal. Gill-membranes meeting at a very obtuse angle, the free margin narrow; gill-rakers 3 + 8, the longest about  $\frac{4}{9}$  of the diameter of the eye. Axillary pore minute. Dull leaden blue above, the sides and abdomen silvery; upper surface of head violet-brown; outer half of adipose fin dark brown; caudal yellowish. [Named for Mr. Kendall Broadbent, explorer and collector.]

Length to 410 millimeters.

Type in the Queensland Museum.

Cape York, Queensland.

The specimens, three in number, from which the description is drawn up, are in the Queensland Museum, and were collected many years ago by Mr. Kendall Broadbent, who has done such good work in elucidating the richness of the Queensland fauna. They are unfortunately in bad condition, having been partially skinned and deprived of the vertebral column,\* and I have not, therefore, been able to make so accurate an examination as was desirable under the circumstances, but the characters given above are sufficiently distinct to justify its separation from *Tachysurus macrocephalus*,† which is its nearest ally. This species, which was originally described from two examples taken at Batavia, and which are indeed still unique, agrees with *Tachysurus broadbenti* in the large size of the head and the deciduity of the vomerine teeth; but differs from our species in the arrangement and shape of the groups of palatine teeth, which, according to both the description and figure given by Bleeker in his "Atlas Ichthologique" are strongly convergent posteriorly, instead of being parallel to one another; it also differs

\* I would like to impress on collectors of fishes and reptiles that, no matter how great the difficulties of transport may be, at least one example of each species should be left intact; it is infinitely preferable to have one perfect specimen than a dozen imperfect.

† *Arius macrocephalus* Bleeker, Verh. Batav. Gen., xxi, 1846, p. 40, Batavia; Günther, Catal. Fish., v. p. 165, 1864.

*Ariodes macrocephalus* Bleeker, Ichth. Arch. Ind. Prodr., Silur. p. 85; and Atl. Ichth., ii, p. 39, pl. Iviii, 1862.

Length to 460 millimeters.

Type in the South Kensington Museum.

Java.

in the comparative broadness of the nuchal shield, the length of which is only twice its width; in the more pronounced occipital granulation; the stronger dorsal spine; and the increased number (20 or 21) of anal rays.

From the only other Australian species, *Tachysurus meyenii*,\* it differs as follows:—

- a.* Head large,  $\frac{1}{3}$  or more than  $\frac{1}{3}$  of the total length; vomerine teeth in small number, deciduous; palatine patches subovate, about twice as long as wide, the tips not divergent posteriorly; nuchal shield coarsely granular; dorsal buckler narrow; anal fin not higher than long; caudal fin shorter than the head ... .. BROADBENTI.
- aa.* Head small,  $\frac{2}{3}$  or less than  $\frac{2}{3}$  of the total length; vomerine teeth in moderate number, permanent; palatine patches elongate and curved, about 4 times as long as wide, the tips divergent posteriorly; nuchal shield smooth, or nearly so; dorsal buckler rather wide; anal fin higher than long; caudal fin longer than head ... .. MEYENII.

#### NEMAPTERYX gen. nov.

Lateral line without anterior granulation. Head moderately depressed, wider than deep. Mouth rather large, crescentic, the upper jaw projecting and of normal width; no rictal lobe. Jaws with bands of villiform teeth; roof of mouth with villiform teeth on the vomer and palatines, the groups separate. Posterior nasal orifices not connected by membrane. Maxillary barbels long and slender. Eye rather small, lateral, with partially adnate lid; a deep preorbital cavity. Dorsal buckler rather large and subcruciform, continuous with the nuchal shield. Gill-openings moderate, wider than the isthmus; six branchiostegals, the first not dilated; gill-rakers short and stout, in moderate number. Axillary pore minute. Rayed dorsal fin opposite to the space between the pectorals and ventrals, the first ray produced in a long filament; adipose fin rather large, inserted wholly above the anal. Occiput rounded; nuchal crest strongly developed. Occipital fontanelle narrow; a temporal foramen. [ $\nu\eta\mu\alpha$ , a thread;  $\pi\acute{\epsilon}\rho\nu\acute{\epsilon}$ , a wing or fin.]

Type *Arius stirlingi*.†

Northern and North-Eastern Australia.

The position of the genus would naturally fall between *Hexanematichthys* and *Hemiarius*.

\* *Ariodes meyenii* Müller & Troschel, Horæ Ichth., iii, p. 9, 1849. Hab. Java. Singapore, Celebes.

† Ogilby, Proc. Linn. Soc. N.S. Wales, xxiii, 1898, p. 281.

## PLOTOSIDÆ.

## ANYPERISTEUS gen. nov.

Lips thin. Teeth small, crowded, recurved, none of them with rounded tips, the outer series in both jaws enlarged and conical. Barbels long. Eyes small. Dorsal fin originating a little behind the gill-opening, with 14 rays. Caudal fin obliquely truncated. Pectoral and ventral fins each with 9 soft rays. (*ἀ* privative; *ὑπέρ*, above; *ιστίον*, a sail: in allusion to the absence of the second dorsal fin.)

Fresh water cat-fishes of small size from southern New Guinea. One, perhaps two, species. Type *Anyperistius perugia* Ogilby = *Eumeda elongata* Perugia (not Castelnau).

The genus, to which I have been obliged to give the new name proposed above, is founded on specimens of less than five inches in total length and in all probability immature.

The form of the inner teeth differs so materially from that which is found in the *Eumeda* of Castelnau (described also from an immature fish), that there can be no question as to the generic distinctness of the two forms. Castelnau's description of the dentition of his *Eumeda* is as follows:—"Teeth on both jaws numerous, crowded, and *tubercular*,\* with a line of sharp conical ones in front." Overlooking his neglect in omitting to mention the vomerine teeth this agrees fairly well with the dental characters of a young *Neosilurus*, but in no degree resembles the *recurved*\* inner teeth attributed to his species by Perugia, and absolutely unique among the plotosids. If it were not for this character I would unhesitatingly assign Perugia's fish, along with Castelnau's to the genus *Neosilurus*, as the remaining diagnostic characters enumerated above, and on which I have to rely, are either of trivial value, or, the genera being admitted identical, of specific importance only; or may perhaps be due to the immaturity of the specimens available for examination. Of these characters the most important is the allegedly small number of ventral rays, which, if given correctly, is without parallel in the family; the value of this character is, however, somewhat discounted by the difficulty, if not impossibility, of accurately computing the number of the rays in these fins without resorting to dissection.

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\* The italics are mine.



Of this difficulty Perugia records his own experience when endeavouring to enumerate the much more conspicuous anal rays of *Lambertia*; it is possible, therefore, that he has failed to detect some of the shorter and more delicate rays.\*

### NEOSILURUS MEDIOBARBIS sp. nov.

#### NARROW-FRONTED TANDAN.

1 D. i 6. 2 D. + C. + A. 118.

Skin covered with a network of fine anastomosing tubules. Lateral line with a series of enlarged tubular papillæ. Depth of body 5, length of head  $4\frac{1}{5}$  in the total length. Head with small, crowded, wart-like papillæ intermixed with larger ones, its width  $1\frac{3}{5}$  in its length, which is  $1\frac{2}{5}$  in the trunk. Diameter of eye rather less than 6 in the length of the head and  $2\frac{7}{8}$  in that of the snout, which is broadly rounded and a little narrower than long. Interorbital region convex, its width subequal to that of the mouth and  $2\frac{1}{2}$  in the length of the head. Each group of premaxillary teeth nearly twice as wide as long at the symphysis; vomerine group subovate,  $1\frac{1}{2}$  time as wide as long mesially; mandibular groups subtriangular, each  $1\frac{1}{2}$  time as wide as long, with the outer extremity forming an obtuse point; tips of teeth not or but little discolored. Barbels moderate, the nasal reaching to beyond the middle of the eye, its length 2 in that of the head; maxillary barbel reaching to the posterior border of the eye; postmental barbel extending horizontally backwards far beyond the gill-opening,  $1\frac{1}{2}$  in the length of the head; mental barbel longer than the maxillary. Predorsal length  $3\frac{1}{2}$  in the total length; dorsal spine straight, smooth in front, serrated behind, the teeth directed upwards,† its length  $1\frac{2}{3}$  in that of the head; longest soft ray as high as the body below it; second dorsal fin with 26 rays, equaling the head in length. Caudal fin with 10 rays,  $6\frac{2}{3}$  in the total length. Anal fin with 82 rays, its distance from the tip of the mandible,  $2\frac{3}{5}$  in the same. Pectoral fin with i 10 rays, the spine straight, smooth in front, strongly serrated behind, a little longer than the dorsal spine; the appressed rays reach backwards to the ventral fin. Ventral pointed, with 13 rays, its length 2 in that of the head. Gill-rakers 8 + 21, the

\* Another solution of the difficulty presented by the abnormally large number of pectoral rays in *Lambertia* and the similarly small number of ventral rays in *Anyperistius* occurs to one's mind, but hardly seems plausible enough; it is that by some unfortunate mischance the numbers were confused by their describer, and the fin formulas of the two genera should read respectively P. 9, V. 13 and P. 9, V. 14 instead of P. 14, V. 13 and P. 9, V. 9. This would bring them into conformity with the other fluviatile genera of the *Tandanus* type.

† This character is so peculiar that I can hardly believe in its constancy.

longest  $1\frac{2}{3}$  in the diameter of the eye. Axillary pore large. Brown, lighter below (*medius*, moderate; *barbus*, barbel).

Length of type 288 millimeters.

Type in the Queensland Museum, Brisbane.

? Queensland.

It is with some hesitation that I have decided to describe as a valid species the solitary specimen which I have had the opportunity of examining, and of whose exact habitat even I am unaware; and all the more so that I am so deeply impressed with the confusion, which has been caused in the history of the fluviatile eel-catfishes by previous crude and inadequate descriptions of supposed new forms. Nevertheless the example here described differs in so many small but not unimportant particulars from a *Neosilurus hyrtlui* of the same size that I have no option but to consider them distinct.

### NEOSILURUS ROBUSTUS.

#### HAIRYHEADED TANDAN.

Skin mostly smooth, anteriorly with closely set hair-like filaments. Depth of body  $3\frac{4}{5}$ , length of head  $4\frac{1}{2}$  in the total length. Head with scattered, wart-like papillæ, its width  $1\frac{2}{3}$  in its length, which is 2 in the trunk. Diameter of eye  $5\frac{1}{4}$  in the length of the head and  $2\frac{1}{3}$  in that of the snout, which is obtusely pointed and wider than long. Interorbital region flat, its width much greater than that of the mouth and  $2\frac{1}{2}$  in the length of the head. Each group of premaxillary teeth about thrice as wide as long at the symphysis; vomerine group crescentic,  $1\frac{2}{3}$  time as wide as long mesially; mandibular groups subovate, each about  $1\frac{1}{2}$  time as wide as long, the outer extremity forming an obtuse point; all the teeth more or less conspicuously tipped with brown. Barbels short, the nasal not quite reaching to the eye, its length 3 in that of the head; maxillary barbel reaching to the middle of the eye; postmental barbel extending horizontally backwards to the gill-opening,  $2\frac{3}{5}$  in the length of the head; mental barbel subequal to the maxillary. Predorsal length 3 in the total length; dorsal spine curved, smooth in front, feebly serrated behind, the teeth directed outwards, its length  $1\frac{4}{5}$  in that of the head; longest soft ray not nearly so high as the body below it: second dorsal fin short. Anal fin with about 82 rays, its distance from the tip of the mandible  $2\frac{1}{5}$  in the total length. Pectoral fin with 10 rays, the spine similar to that of the first dorsal, the soft rays when appressed not quite reaching to the ventral fin. Ventral rounded, with 12 rays, its length 2 in that of the head. Gill-rakers

6 + 16, the longest  $1\frac{3}{5}$  in the diameter of the eye. Axillary pore moderate. Brown, lighter below (*robustus*, stout).

Length of type, without caudal fin, 278 millimeters.\*

Type in the Queensland Museum, Brisbane.

Keppel Bay, Queensland.

The specimen on which I have founded the present species, has been the source of no inconsiderable anxiety to me. In two important characters it departs materially from the type of *Neosilurus* as exemplified by the typical *N. hyrtlui*, and in both it exhibits a marked approach to the *Tandanus* type. These characters are—(1) the presence of dermal filaments on the head and body and (2) the approximation in the length of the trunk and tail. Another circumstance also requires comment, and cannot fail to strengthen the doubt as to the validity of its claim to specific rank, namely, that it was forwarded from the same locality, by the same collector, and presumably at the same time as an undoubted specimen of *Neosilurus hyrtlui*. When, therefore, it is taken into account that both that species and *Tandanus tandanus* are common fishes of the Fitzroy River and its tributaries (which drain into Keppel Bay), it will not seem preposterous to suggest that we may perhaps be dealing with a hybrid between the two forms.

*Analysis of the species of Neosilurus.*

- a. Barbels long, the nasals reaching to the origin of the first dorsal fin.
  - 1. *brevadorsalis*.
- aa. Barbels short, the nasals not reaching beyond the eye.
  - b. Skin without filaments; depth of body  $4\frac{1}{2}$  or less in the total length; preanal length less than  $2\frac{1}{2}$  in the same.
    - c. Width of interorbital region subequal to that of the mouth; postmental barbel reaching well beyond the gill-opening; gill-rakers 29; first dorsal fin as high as the body below it ... 2. *mediobarbis*.
    - cc. Width of interorbital region much greater than that of the mouth; postmental barbel not reaching to the gill-opening; gill-rakers 20 or 21; first dorsal fin not so high as the body below it ... 3. *hyrtlui*.
  - bb. Skin anteriorly with criniform filaments; depth of body more than 4 in the total length; preanal length  $2\frac{3}{5}$  in the same.
    - d. Width of interorbital region much greater than that of the mouth; postmental barbel not reaching to the gill-opening; gill-rakers 22; first dorsal fin not nearly so high as the body below it
      - 4. *robustus*.

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\* The second dorsal and caudal fins and the extremity of the anal fin are much injured.

## APLOCHITONIDÆ.

## JENYNSELLA gen. nov.

Body elongate and subfusiform, scaleless. Lateral line represented by a series of small pores along the middle of the sides. Head small and subconical, its upper profile feebly convex; snout short and rounded. Mouth terminal, with narrow, oblique cleft, the jaws equal. A single series of small, stout, conical teeth in each jaw; vomer toothed; palatines toothless. Nostrils large and open, contiguous. Eyes of moderate size, anteromedian, lateral. Rayed dorsal fin originating above the anus, with 9 rays, its posterior rays opposite to the anal fin; adipose dorsal wholly behind the anal fin: anal fin with 14 rays: caudal deeply forked: pectoral small, rounded, symmetrical, inserted very low, almost on the ventral profile below the gill-opening, with 9 rays, the middle the longest: ventrals rounded, with 7 rays, inserted close together and much nearer to the tip of the snout than to the base of the caudal. Gill-openings wide; gill membranes separate, free from the isthmus; five branchiostegals; pseudobranchiæ large; gill-rakers in small number, stout, and conical. Genital papilla very large. [Named for the Rev. Leonard Jenyns, author of the *Fishes of the Beagle* and founder of the allied genus *Aplochiton*].

Southern Queensland and ? Tasmania.\*

Type *Jenynsellia weatherilli*.

## JENYNSELLA WEATHERILLI sp. nov.

## QUEENSLAND SMELT.

D. 9; A. 14; P. 9; V. 7. Ventral profile more arched than that of the dorsal; width of body  $1\frac{2}{3}$  in its depth, which is  $5\frac{1}{3}$  in its length. Head compressed, its length  $4\frac{1}{4}$  in that of the body. Snout short and blunt, rounded above, its length  $\frac{3}{4}$  of the diameter of the eye, which is rather more than  $\frac{1}{3}$  of the length of the head. Inter-

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\* Johnston's brief description of *Haplochiton sealii* gives, as previously mentioned, no clue as to the generic affinity of that species; but on the supposition that the two Australian species are congeneric, I give the following synopsis by which they may be easily distinguished—

a. Body very slender, its depth 10 in the total length;† head depressed; anal fin long, with 19 or 20 rays ... .. SEALII

aa. Body comparatively robust, its depth more than 7 in the total length;† head compressed; anal fin shorter, with 14 rays ... .. WEATHERILLI

† From tip of snout to extremity of caudal fin.



orbital region convex, its width  $3\frac{1}{3}$  in the head. Maxillary extending to the vertical from the anterior border of the pupil. Space between origin of dorsal and root of caudal  $1\frac{3}{4}$  in its distance from the tip of the snout; length of dorsal fin  $\frac{5}{6}$  of its height: adipose dorsal inserted much nearer to the caudal than to the rayed dorsal and wholly behind the anal. Anal fin commencing a little behind the origin of the dorsal and much nearer to the origin of the ventral than to the caudal, as high as and  $1\frac{1}{2}$  time as long as the rayed dorsal. Caudal emarginate, the middle rays  $\frac{5}{7}$  of the outer, which are  $5\frac{1}{2}$  in the length of the body: caudal peduncle slender, its least depth  $2\frac{5}{6}$  in the depth of the body. Pectoral rounded,  $1\frac{1}{3}$  in the head. Ventral inserted midway between the tip of the snout and the last anal ray, its length  $1\frac{1}{2}$  in the head. Yellowish brown, with an ill-defined paler longitudinal band from the eye to the middle of the tail; distal half of tail with a dark median streak, which expands posteriorly to form a dusky blotch at the base of the caudal; upper surface densely powdered with blackish dots; opercles with larger dots; a series of similar dots at the bases of the rayed dorsal and anal. [Named for William Edward Weatherill, its collector].

Type in the Queensland State Museum.

Total length 57 millimeters.

Streams near Brisbane.

• Differs from *Aplochiton sealii* Johnston,\* in the much deeper body, the compressed and longer head, the shorter snout, larger eye, and shorter maxillary, the decreased number of anal rays, etc.

Described from a single specimen collected by Mr. W. E. Weatherill in Enoggera Creek during August, 1906.

## SYNGNATHIDÆ.

### CORYTHOICHTHYS SPINICAUDATUS sp. nov.

#### THORN-TAILED PIPE-FISH.

Osseous rings 16 + 30. Body heptagonal and rather stout, its width  $1\frac{2}{3}$  in its depth, which is less than the postorbital portion of the head. Frontal region of head obliquely linear; length of head  $3\frac{2}{3}$  in the preanal length, which is  $1\frac{4}{5}$  in the length of the tail. Snout curved upwards anteriorly, with a moderate keel above and below, half as long as the rest of the head. Occipito-nuchal carina originating on a level with the posterior border of the orbits and terminating at the end of the 1st. body ring; it is moderately developed and divided by notches into three subequal sections; supra-

\* Proc. Roy. Soc. Tas., 1882, p. 128.

ciliary ridges short, not extending backwards to opposite the middle of the occipital section; opercular ridge low. Dorsal profile linear; all the divisions of the body transversely concave, the ridges moderately prominent; dorsal ridge feebly spinigerous, terminating on the 2nd. caudal ring; lateral ridge curved, continuous with the lower caudal ridge; abdominal ridge ceasing on the anal ring; upper caudal ridge commencing on the anal ring; all the caudal ridges strongly spinigerous throughout their entire length. Dorsal fin inserted upon 2 body and 3 caudal rings, with 22 rays, the base not elevated, its length equaling the head from the tip of the upper jaw. Caudal fin with 10 rays,  $3\frac{2}{3}$  in the length of the head. Pectoral with 14 rays, reaching upon the 2nd. body ring. Ovisac occupying 14 rings, its length  $\frac{1}{2}$  of that of the tail. Pale olivaceous brown the head lighter. [*spina*, spine; *caudatus*, tailed].

Type in the Queensland State Museum.

Total length 57 millimeters.

Described from an adult male with distended egg-pouch, collected at Cape York by Mr. Kendall Broadbent.

Closely allied to *C. brevirostris*, but differing in the stronger cephalic ridges, the more numerous osseous rings and dorsal rays, the more anterior origin of the dorsal fin, the spinigerous tail, etc.

## HIPPOCAMPIDÆ.

### HIPPOCAMPUS DAHLI sp. nov.

#### DAHL'S SEA-HORSE.

Dorsal fin with 20 or 21 rays, inserted upon 3 body and 1 tail rings. Rings 11 + 40 or 41. Body slender, its depth  $1\frac{2}{3}$  to 2 in the length of the head. Diameter of eye  $3\frac{1}{2}$  to 4 in the length of the snout, which is  $1\frac{4}{5}$  to 2 in the length of the head and much longer than its postorbital portion. Frontal ridges low, convergent anteriorly, descending gradually to their point of junction on the snout. Supraorbital spine moderate, blunt, with the tip more or less coarsely granulose, directed outwards and backwards; no postorbital, suborbital, or temporal spines. Coronet low, preceded by a rather short ridge, which terminates in a slightly hooked spine; its summit is surrounded by three pairs of low, blunt, finely denticulated tubercles with an unpaired, median, hooked spine posteriorly; height of coronet one fourth of the length of the snout. Nuchal ridge high, with irregular granulose profile. Opercle with delicate, divergent striæ. Pectoral arch with 3 widely separated tubercles, the lower the most prominent. Trunk 7-ridged; all the

ridges, but especially the median abdominal, armed with well developed, subacute tubercles. The three posterior dorsal rings elevated above the others. Dorsal ridge of tail not continued on the body rings; ventral ridge continuous with but on a lower plane than the lateral body ridge, without cessation of tubercles. Base of dorsal fin as long as or somewhat shorter than the snout. Préanal length about  $\frac{4}{5}$  of that of the tail. Brown, the sides of the abdomen with a golden tinge; snout and sides of the head dull leaden blue in fresh specimens; tips of the trunk tubercles light-colored, forming bands. Dorsal fin with a dark basal band. Irides white. [Named for Mr. Christian Dahl, who first sent me a specimen].

Length of largest (type) example 105 millimeters.

Type in the Queensland Museum, Brisbane.

Coast of southern Queensland.

Dahl's Sea-Horse is related to the Chinese and West Malayan *H. trimaculatus*\* from which it differs in the greater length of the dorsal fin, the increased number of caudal rings, the more slender body, the greater number of coronal spines, etc.; also to the *H. subelongatus*† of West Australia, from which it may be distinguished by the increased number of dorsal rays, the shorter snout, the lower coronet, etc.

On recognizing that Mr. Dahl's fish belonged to a hitherto undescribed species I made an examination of the specimens of *Hippocampus* contained in the collection of the Queensland Museum, with the result that I discovered two other examples. One of these was labeled "*Hippocampus subelongatus* Cast.; Moreton Bay; Donor, Mr. G. Watkins"; the other "*Hippocampus lenis* de Vis; Noosa; Donor, Mrs. Birkbeck." This latter is merely a museum name, no description having ever been made; nor can I accept the name, since, the annular spines being well developed, it would be unsuitable. The Noosa specimen, however, being the largest and finest of the three which I have utilized in drawing up the above description, I have selected as the type of the species. Mr. Dahl's example was found attached to a branch of seaweed, which was coiled round the anchor line of a boat in Moreton Bay; it is a half-grown male, and has been placed in the collection of the Queensland Amateur Fishermen's Association.

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\* *Hippocampus trimaculatus* Leach, Zool. Misc., p. 104 = *H. mannulus* Cantor, Catal. Malay. Fish., p. 388, pl. xi. fig. 1, 1850.

† *Hippocampus subelongatus* Castelnau, Proc. Zool. & Acclim. Soc. Vict., ii, 1873, p. 145.

## MUGILIDÆ.

## MUGIL STEVENSI sp. nov.

## STEVENS' GRAY MULLET.

\* Sc. 31—11. Dorsal contour feebly arched, much less so than the ventral; greatest depth, below the spinous dorsal,  $3\frac{2}{3}$ , length of head 4 in the length of the body. Upper profile of head moderately convex to between the eyes, linear and but little oblique behind them. Upper lip thin and curved, with its upper edge continuous with the snout, the depth of its vertical portion less than half the diameter of the eye; lower border formed by a pair of convex lobes, separated by a moderate symphysial notch. Jaws with a single series of fine cilia. Maxillary extending to below the posterior nostril, curved downwards and slightly swollen distally, entirely hidden beneath the preorbital. Snout broad, emarginate in front, scaly,  $\frac{5}{6}$  of the diameter of the eye, which is  $3\frac{2}{3}$  in the length of the head. Adipose eyelid narrow anteriorly, much wider and almost reaching the iris posteriorly. Interorbital region convex, its width 2 in the length of the head. Preorbital scaly, its outer border forming a widely obtuse angle, denticulated throughout its entire length with the exception of a short, smooth area immediately in front of the distal angle; the denticles increase in size posteriorly, those behind the angle, especially the last three, being very strong; it forms an acute angle with the distal border, which is feebly convex and finely serrated. Depth of cheek below the middle of the eye  $\frac{2}{3}$  of the diameter of the eye. Rami of lower jaw meeting at a widely obtuse angle, separated by a deep mesial groove, and naked anteriorly. Free intermandibular space rather small and cuneiform. Angle of preopercle produced; interopercles in contact; opercles smooth. Spinous dorsal originating above the 11th. body-scale and nearer to the base of the caudal than to the tip of the snout; spines strong, the 1st. much higher than the 2nd. and  $1\frac{2}{3}$  in the length of the head: soft dorsal originating above the 20th. body-scale, its distance from the origin of the spinous equaling the head. Anal originating below the 17th. body-scale; space between its origin and that of the soft dorsal rather more than the head; basal length  $\frac{2}{3}$  of its distance from the caudal. Caudal emarginate, with 12 branched rays, the middle pair about  $\frac{2}{3}$  of the outer and  $5\frac{1}{2}$  in the

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\* The dorsal and anal fins are so much injured that it is impossible to count the number of soft rays.



length of the body: caudal peduncle long and strong, its length  $6\frac{1}{4}$ , its least depth  $7\frac{1}{3}$  in the length of the body. Pectoral inserted nearer to the dorsal than to the ventral profile, with 16 rays, the 4th. the longest, reaching to the 8th. body-scale and  $5\frac{3}{5}$  in the length of the body, space between its tip and the origin of the spinous dorsal  $\frac{1}{5}$  of its length. Ventral inserted a little nearer to the anal than to the tip of the mandible, and below the middle 3rd. of the pectoral, its length  $1\frac{3}{5}$  in the head. Scales of preorbitals cycloid, of cheeks and lower surfaces finely ciliated; scales in 6 series between the eye and the angle of the interopercle, two of which are on that bone; 18 scales in front of the spinous dorsal; 9 scales in an oblique series from the origin of the soft dorsal to far behind the anal. Gill-rakers 61 on the lower branch of the anterior arch, the longest  $\frac{2}{5}$  of the diameter of the eye. Greenish brown above, lighter on the sides and below; tips of caudal rays dusky. [Named for Mr. James Hirst Stevens, Inspector of Fisheries for the State of Queensland].

Length [of type] to tip of middle caudal rays 165 millimeters.

Type in the Queensland Museum.

Gold Island, Rockingham Bay.

Nothing is known of the habits of this mullet, the only specimen having been collected many years ago by Mr. Kendall Broadbent; it is in very bad condition, parts of all the soft fins being broken off and the head injured; the salient characters are, however, sufficiently preserved to enable us to see at a glance that nothing resembling it has hitherto been recorded from Australian seas and to draw up the above description. Notwithstanding that the type was obtained in the open bay its habit and affinities all point to this being a small estuarine or even fresh-water species, and we are, therefore, inclined to think that specimens would be more easily procurable in the Herbert River than at Gold Island.

The nearest ally of this mullet is the fish described and figured by Day\* as *Mugil dussumieri*, the distribution of which is given as "Seas of India, entering fresh water." From the wording of his remarks below the descriptions of both that fish and *M. subviridis* we may infer that Day examined the types of both species in the Paris Museum. This was undoubtedly necessary for if we were obliged to rely on the respective descriptions alone we would never have dreamt of associating the *M. dussumieri* of Day with the fish described under the same name by Valenciennes as having "the snout compressed and wedge-shaped; the preorbital keeled and folded upon itself; and the anterior adipose eyelid larger than the

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\* Fish. India, p. 352, pl. lxxiv, fig. 4, 1876.

posterior.”\* The latter character, which is exactly opposed to fact, Valenciennes thought so highly of that he remarks “This arrangement appears to me to be characteristic of this species.”† The single character on the strength of which Day separates *M. subviridis* from *M. dussumieri*, namely, the absence or presence of teeth in the upper jaw, is, we consider, valueless, since we have found it equally variable in our *M. georgii*; consequently the correct name by which the species should be known is *Mugil subviridis*. Day, furthermore, places in the synonymy of *M. dussumieri*, both *M. subviridis* Günther and *M. nepalensis* Günther; as regards the latter species we are quite in accord with the author of the “Fishes of India,” but we must join issue with him as to the former. Throughout his whole classification of the family Günther very properly lays great stress on the number of soft anal rays as a valuable character in the differentiation of the species; now, having a Madras example before him, he unhesitatingly records it as having but eight soft rays; it cannot, therefore, be identical with *M. dussumieri*, which, like his own *M. nepalensis*, has nine; and since Day, after examining the types, assures us that each of the two Cuvierian species have also nine, it follows that it cannot be either of them; there are besides other differential characters between the two species. For instance in Günther’s fish the mouth is much wider, both adipose eyelids are well developed, the outer edge of the preorbital is apparently smooth, the spinous dorsal is inserted further back above the eleventh body scale; the caudal peduncle is deeper, the pectoral fin shorter, &c. The mullet, therefore, described by Günther is at present without a name and might with propriety be separated as *Mugil alcocki*, in commemoration of the splendid work accomplished by the present Superintendent of the Indian Museum.‡ Our species, which is the

\* “Le museau est comprimé en coin; ..... le sous-orbitaire est carené, plié sur lui-même; ..... au-devant de l’œil, on voit une peau épaisse adipeuse, qui ne s’avance pas assez sur cet organe pour lui servir de voile: il y a aussi un peu d’adiposité près de l’autre angle.”

† “Cette disposition me paraît caractéristique dans cette espèce.”

‡ The synonymy of the two Indian fishes should then be as follows:—

### 1. MUGIL SUBVIRIDIS.

*Mugil subviridis* Cuvier & Valenciennes, Hist. Nat. Poiss., xi, p. 115, 1836: Pondicherry; River Ganges—Day, Fish. India, p. 353, 1876.

*Mugil dussumieri* Cuvier & Valenciennes, ibid., p. 147, 1836: Bombay—Day, Fish. India, p. 352, pl. lxxiv, fig. 4, 1876: Seas of India, entering fresh water; River Hooghly.

*Mugil nepalensis* Günther, B.M. Catal. Fish., iii, p. 424, 1861: Fresh waters of Nepal.

### 2. MUGIL ALCOCKI.

*Mugil subviridis* Günther, B.M. Catal. Fish., iii, p. 423, 1861: Madras—Day, Fish. Malabar, p. 138, 1865. Not of Cuvier & Valenciennes, 1836.

eastern analogue of *M. subviridis* differs among other characters from that species in its deeper body ( $4\frac{1}{3}$  in total length with the caudal), more convex snout, ciliated jaws, concealed maxillary, scaly snout, larger eye, wider and convex interorbital region, posterior insertion of spinous dorsal, etc. It is noteworthy that neither Cantor nor Bleeker have recorded any mullet having the first dorsal spine prolonged from any part of the Malay Peninsula and Archipelago.

### MUGIL NORTONI sp. nov.

#### NORTON'S GRAY MULLET.

*Mugil longimanus* Steindachner, Denk. Akad. Wien, xli, 1879, p. 5: Port Jackson—Klunzinger, Sitzb. Akad. Wien, lxxx, i, 1879, p. 395: Cleveland Bay—Macleay, Proc. Linn. Soc. N. S. Wales, ix, 1884, p. 41—Ogilby, Catal. Fish. N. S. Wales, p. 41, 1886—Kent, Class. List. Queensl. Food-Fish., App. A, p. 370, 1893. Not of Günther 1861.

*Mugil cunnesius* Waite, Synops. Fish. N. S. Wales, p. 22, 1904. Not of Cuvier & Valenciennes 1836.

D. iv, i 8; A. iii 9. Sc. 32 to 34—12. Dorsal and ventral contours of body equally and moderately arched; greatest depth, below the spinous dorsal,  $3\frac{1}{4}$  to  $3\frac{2}{5}$ , length of head  $3\frac{1}{5}$  to  $4\frac{1}{5}$  in the length of the body. Upper profile of head gently rounded, as oblique as the lower. Upper lip thick, its exposed edge vertical, its depth  $\frac{4}{5}$  of the longitudinal diameter of the pupil; lower border formed by a pair of feebly convex lobes separated by a symphysial notch. Jaws with a single series of fine cilia. Maxillary extending to below the posterior nostril, bent downwards distally, slender, and entirely hidden beneath the preorbital. Snout rather broad, rounded in front, feebly convex above, naked,  $\frac{5}{6}$  of the diameter of the eye, which is  $3\frac{2}{3}$  in the head. Adipose eyelid small, extending over less than half of the iris in front and behind. Interorbital region convex, its width  $2\frac{2}{5}$  in the length of the head. Preorbital naked, its outer border deeply notched posteriorly, feebly serrated, forming a rectangle with the distal border, which is truncated and finely denticulated. Depth of cheek below the middle of the eye  $\frac{7}{8}$  of the diameter of the eye. Rami of lower jaw meeting at a slightly obtuse angle, separated by a deep mesial groove, and almost wholly scaly. Free intermandibular space small, cuneiform with the sides curved outwards in the posterior half, and about 4 times as long as wide. Angle of preopercle somewhat produced; interopercles in contact; opercles smooth. Spinous dorsal originating above the 13th. body-scale and

nearer to the base of the caudal than to the tip of the snout; spines feeble, the 1st. a little the highest,  $1\frac{3}{4}$  to  $1\frac{4}{5}$  in the length of the head: soft dorsal originating above the 24th. body-scale, higher than the spinous dorsal, the distance between their origins as long as the head; outer border feebly emarginate, the last ray a little longer than the penultimate. Anal originating below 21st. body scale, and rather higher than the soft dorsal, the space between its origin and that of the soft dorsal slightly longer than the head, its basal length equal to or rather less than its distance from the caudal; outer border emarginate, the posterior ray produced. Caudal emarginate, with 12 branched rays, the middle pair  $\frac{1}{5}$  of the outer and  $4\frac{1}{4}$  in the total length: caudal peduncle strong and deep, its length  $6\frac{1}{2}$ , its least depth 7 in the length of the body. Pectoral inserted nearer to the dorsal than to the ventral profile, with 17 rays, the 3rd. the longest, extending to the 11th. body scale, and 4 to  $4\frac{1}{2}$  in the length of the body; space between its tip and the origin of the spinous dorsal  $3\frac{1}{2}$  to 4 in its length: axillary scale foliate, not so long as the eye. Ventral inserted nearer to the anal than to the tip of the mandible, and below the middle third of the pectoral, its length  $1\frac{1}{2}$  in the head. Scales of cheeks and lower surfaces finely ciliated; scales in seven series between the eye and the angle of the interopercle, two of which are on that bone; opercular scales in three series, much larger than the body scales; 20 scales in front of the spinous dorsal; 9 scales in an oblique series from the origin of the soft dorsal to behind the anal. Gill-rakers 58 on the lower branch of the anterior arch, the longest about  $\frac{2}{5}$  of the diameter of the eye. Brown above, silvery on the sides and below; a small black axillary spot; soft dorsal and caudal fins with blackish tips. [Named for the Hon. Albert Norton, M.L.C., late Chairman of the Board of Trustees of the Queensland Museum].

Length of type to tip of middle caudal rays 168 millim.

° Type in the Queensland Museum.

Eastern Australia.

The gray mullet, described in 1861 by Dr. Günther as *Mugil longimanus*, has proved a fruitful source of confusion to all subsequent students of the Indian, Malaysian, and Australian members of the family. This confusion was partly and primarily caused by an inexcusable mistake of Dr. Bleeker, partly through the



inadequacy of the original description, and partly through the unfortunate tendency, which is prevalent among many recent writers, of blindly following the dictum of some previous author, without personally sifting the evidence for and against in every obscure case, and, when possible, by personal examination verifying or contravening it. We trust, therefore, that the following remarks will be of some value in clearing up the confused synonymy of the species under consideration.

In the year 1803 Dr. Patrick Russell published his "Fishes of Vizagapatam"; in this work three species of gray mullets were described and figured under the native names "*Bontah*," "*Kunnesee*," and "*Peddaraki Sovere*"; it is with the second of these that we are now concerned. At the beginning of the nineteenth century no special importance was attached to the number of scales on or above the lateral line, and we therefore find that neither Russell, nor subsequently Cuvier & Valenciennes, make any reference to this important character; from this omission rose all the subsequent confusion. It is, then, necessary to ascertain whether from the figures of the two remaining species (respectively *M. oeur* and *L. waigiensis*) we can deduce sufficient reliable data to enable us to fix with some degree of accuracy the number of transverse series of scales in the *kunnesee*. A glance at the figures will show that owing to the over-attenuation of the posterior caudal scales the numbers in both these figures are considerably in excess of what we know them to be in fact. Thus in *Mugil oeur* we have ascertained from actual examination that the number varies from 42 to 44 and in *Liza waigiensis* from 26 to 27, the corresponding numbers in Russell's figures being 51 (computing 6 for the space covered by the fin that being the same number contained in a similar succeeding space) and 35, or in each case from 7 to 8 or 9 extra scales, although one is a small-scaled, the other a large-scaled species; inferentially, therefore, we may conclude that a similar reduction of 7 to 9 scales from the number figured over "*Kunnesee*" will give us the approximate number of transverse series in that fish. In Russell's figure 52 scales are shown, which by the application of the above rule would give us a fish with from 43 to 45 series of scales. Dr. Cantor, who, next after Valenciennes, gave a detailed account of this mullet, had many opportunities of observing and examining it in various parts of the Malay Peninsula and Archipelago and

describes it as having 42 or 43 lateral scales, a number which Günther afterwards verified from an examination of Cantor's specimens then deposited in the British Museum. There is, therefore, we contend, no evading the fact that the fish figured by Russell and subsequently described by Cantor and Günther has at least 42 scales between the upper angle of the opercle and the base of the caudal, and is the true *Mugil cunnesius* of Cuvier and Valenciennes, whose specimens came from the Moluccas and Bombay. Meanwhile, however, Bleeker in 1852, disregarding the evidence of Russell's figure and the descriptions of the French savants and of Cantor, applied the name *Mugil cunnesius* to a Mayalan mullet having but 35 series of scales, and eight years later persisted in this mistake. In the year following Bleeker's second publication Günther's classification of the MUGILIDÆ appeared in the third volume of the "British Museum Catalogue of Fishes," and the author, perceiving the glaring inconsistency of Bleeker's proceeding, very properly separated the large-scaled form as *Mugil longimanus*. It seemed now that the relationship between the two species was fully delimited, and doubtless such would have been the case but for the subsequent action of Dr. Day. This author in his "Fishes of Malabar," 1865, following Cantor and Günther, described *M. cunnesius* as having 41 to 43 lateral series of scales and in the same work applies to the fish previously called *M. longimanus* by Günther the name *Mugil engeli*, Bleeker, a fish with but 33 or 34 series of scales. In his great work on the "Fishes of India" issued eleven years later, he, for some reason which he neglected to explain, altered his opinion and described and figured *M. cunnesius* as having from 33 to 35 series of scales only, and adds to its synonymy *M. longimanus* and his *M. engeli*. That, however, he was in considerable doubt as to the propriety of his action seems probable from the confusion which is apparent in that part of the synonymy following *Mugil cunnesius*. We have not at hand a copy of the "Fauna of British India," but we have no doubt that the error is perpetuated there, since Waite in his recent "Synopsis" includes *M. cunnesius* among the fishes of New South Wales, while omitting *M. longimanus*; in this he has evidently followed Day, not having an example on which to form an unbiased judgment. As far back as 1879 Steindachner recorded a specimen of *M. longimanus* from Port Jackson, where, however, all the efforts of half a dozen enthusiastic marine biologists have failed to secure a second specimen. In the following year Klunzinger reported its occurrence in Cleveland Bay, Middle Queensland. Both these latter records properly belong to the form, which we have here separated as *Mugil nortoni*, the true Indo-Malayan *M. longimanus* never having, in our opinion, been

properly certified from Australian waters, though it possibly occurs on our north-western coast.

Appended is the synonymy and principal differential characters of the three species:—

### 1. MUGIL CUNNESIUS.

*Kunnesee* Russell, Fish. Vizag., ii, p. 65, pl. clxxxi, 1803 : Coromandel Coast—Cuvier, Regne Anim., 2nd. ed., ii, p. 232, 1829—Griffith, in Cuvier's Anim. Kingd., x, p. 224, 1834.

*Mugil cunnesius* Cuvier & Valenciennes, Hist. Nat. Poiss., xi, p. 114, 1836 : Bombay ; Moluccas—Cantor, Journ. Asiat. Soc. Bengal, 1849, p. 1082 : Pinang ; Malay Peninsula ; Singapore—Günther, B. M. Catal. Fish., iii, p. 434, 1861 : Amboina—Day, Proc. Zool. Soc., 1865, p. 33 : Cochin—id., Fish. Malabar, p. 136, 1865.

? *Mugil cunnesius* Rüppell, Neue Wirbelth. Abyss., Fisch. p. 131, 1838 : Red Sea.

Scales in 42 or 43 transverse series ; depth of body subequal to length of head ; upper lip thin ; tip of maxillary exposed ; upper profile of snout feebly convex ; outer border of preorbital smooth, nearly straight ; spinous dorsal originating nearer to tip of snout than to base of caudal ; origins of dorsal fins corresponding to the 12th. and 25th. body-scales ; vertical fins scaleless ; caudal fin emarginate ; pectoral fin much shorter than the head.

### 2. MUGIL LONGIMANUS.

*Mugil cunnesius* Bleeker, Nat. Tijdschr. Ned. Ind., iii, 1852, p. 434 : Banka ; Java ; Madura ; Sumatra—id., Act. Soc. Sci. Ind. Neerl., viii, 1860, p. 8—Day, Fish. India, p. 349, pl. lxxiv, fig. 3, 1876 : Orissa ; Bombay. Not of Cuvier & Valenciennes, 1836.

*Mugil longimanus* Günther, B. M. Catal. Fish., iii, p. 428, 1861 : East Indies.

*Mugil engeli* Day, Proc. Zool. Soc., 1865, p. 33 : Cochin—id., Fish. Malabar, p. 139, 1865. Not of Bleeker, 1858.

Scales in 33 to 35 transverse series ; depth of body much greater than length of head ; upper lip rather thick ; tip of maxillary concealed ; upper profile of snout very convex ; outer border of preorbital curved and serrated ; spinous dorsal originating rather nearer to tip of snout than to base of caudal ; origins of dorsal fins corresponding to the 10th. and 20th. body-scales ; vertical fins scaly ; caudal fin truncated ; pectoral as long as the head.

### 3. MUGIL NORTONI.

Syn. *ut supra*.

Differs from *M. longimanus* in the following characters:—Scales in 32 to 34 transverse series ; upper profile of snout feebly convex ; outer border of preorbital deeply notched ; spinous dorsal originating nearer to base of caudal than to tip of snout ; origins of dorsal fins corresponding to the 13th. and 24th. body-scales ; caudal fin emarginate.

## MUGIL TADOPSIS sp. nov.

## BROWN-BANDED MULLET.

D. viii, i 8; A. iii 9. Sc. 32 or 33-11. Ventral contour of body more arched than that of the dorsal; greatest depth below the spinous dorsal  $3\frac{1}{2}$  to  $3\frac{3}{5}$ , the length of the head  $4\frac{2}{5}$  in the length of the body. Upper profile of head feebly convex to before the upper third of the eyes, sublinear and but little oblique behind. Upper lip thin, its exposed edge rounded above, vertical in front, its depth  $\frac{2}{3}$  of the longitudinal diameter of the pupil; lower border formed by a pair of sublinear lobes, separated by a narrow symphysial notch. Jaws with a single series of minute cilia. Maxillary extending to behind the posterior nostril, bent abruptly downwards and somewhat thickened posteriorly, its distal limb exposed. Snout broad, feebly rounded in front, almost wholly scaly, about as long as the diameter of the eye, which is  $3\frac{7}{8}$  to  $4\frac{1}{4}$  in the length of the head; adipose lid narrow in front, much wider and nearly reaching the pupil behind. Interorbital region convex, its width 2 to  $2\frac{1}{5}$  in the length of the head. Preorbital scaly, its outer border deeply concave, feebly serrated posteriorly, and forming a rectangle or rather less than a rectangle with the distal border, which is subtruncate and finely denticulated. Depth of cheek below the middle of the eye about half a diameter of the eye. Rami of lower jaw meeting at an obtuse angle, separated by a shallow mesial groove and almost wholly scaly. Free intermandibular space narrow and cuneiform. Interopercles in contact. Spinous dorsal originating above the 10th. body scale and somewhat nearer to the tip of the snout than to the base of the caudal; spines strong, the 2nd. the highest,  $1\frac{1}{2}$  to  $1\frac{3}{5}$  in the length of the head: soft dorsal originating above the 20th. body scale and considerably higher than the spinous dorsal, the distance between their origins  $\frac{1}{5}$  more than the length of the head; outer border rather deeply emarginate, the last ray a little longer than the penultimate. Anal originating below the 19th. body-scale, as high as the soft dorsal, the space between its origin and that of the soft dorsal  $\frac{1}{5}$  longer than the head, its basal length  $1\frac{2}{5}$  to  $1\frac{1}{2}$  in its distance from the caudal; outer border emarginate, the posterior border but little produced. Caudal fin deeply emarginate, with 12 branched rays, the middle pair  $\frac{2}{3}$  of the upper, and 6 to  $6\frac{1}{4}$  in the length of the body: caudal peduncle strong and deep, its length 6 to  $6\frac{3}{4}$ , its least depth 7 to  $7\frac{1}{4}$  in the body-length. Pectoral fin inserted nearer to the dorsal than to the ventral profile, with 17 rays, the 4th. the longest, extending to the 7th. body scale, and  $4\frac{3}{5}$  to 5 in the length of the body; space between its tip and the origin of the spinous dorsal  $\frac{5}{6}$  to  $\frac{2}{4}$  of its length: axillary scale



vestigial. Ventral inserted midway between the anal and the tip of the mandible or a little nearer the latter, and below the last 3rd. of the pectoral, its length  $1\frac{2}{3}$  to  $1\frac{1}{2}$  in the head. Scales of cheeks and lower surfaces finely ciliated; 6 series of scales between the eye and the angle of the interopercle, 1 of which is on that bone; opercular scales in 3 series, the outer larger than the body scales; 20 scales in front of the spinous dorsal; 8 or 9 scales from the origin of the soft dorsal to behind the anal. Gill-rakers short, about 50 on the lower branch of the anterior arch, the longest  $\frac{2}{7}$  of the diameter of the eye. Dark blue above, silvery washed with bronze on the sides, pearly white below; each scale of the back and sides with a golden brown median bar, forming together longitudinal bands; opercle with a cloudy spot: dorsal and caudal fins dull greenish; an obscure blackish blotch in the axil of the pectoral: iris lead-blue, with a narrow golden rim superiorly. [*tade*, an allied species; *oψus*, form].

Type in the Queensland Museum.

Total length 325 millimeters.

Described from three Moreton Bay specimens purchased in the Brisbane Market.

The synonymy of the East Australian fresh water mullet having become overburdened by the addition of new names it may be advisable to correct it here, and so prevent further confusion.

### TRACHYSTOMA PETARDI.

- Mugil breviceps* Steindachner, Sitzb. Ak. Wien, liii, 1866, p. 459, pl. i, fig. 1:  
Port Jackson—id., Ann. & Mag. Nat. Hist., (3) xvii, 1866, p. 318—Ogilby,  
Catal. Fish. N. S. Wales, p. 41, 1886. Not of Cuvier & Valenciennes, 1836.
- Mugil petardi* Castelnau, Res. Fish. Austr., p. 32, 1875: Richmond River—  
Waite, Synops. Fish. N. S. Wales, p. 22, 1904.
- Mugil pettardi* Macleay, Proc. Linn. Soc. N. S. Wales, iv, 1879, p. 422—  
Ogilby, l.c., p. 42. Emended orthography.
- Trachystoma multidens* Ogilby, Proc. Zool. Soc., 1887, p. 614: Keruah River—  
Waite, l.c.
- Liza breviceps* Tosh, Mar. Biol. Rep. Queensl., pp. 2 & 3, pl. ii, fig. 4, 1903:  
Nerang River.
- Mugil parviceps* Waite, l.c. Substitute for *Mugil breviceps* preoccupied.

### SQUALOMUGIL gen. nov.

Scales large and cycloid; head depressed, scaly, except the tip of the snout and the lower jaw. Mouth moderate, obtusangular, inferior, not protractile. Upper lip thin; maxillary concealed. Jaws with spatulate cilia. Nostrils widely separated, the anterior patent and subinferior, the posterior valvular and superior. Distal border of preorbital concealed. Soft dorsal and anal fins scaly, the

former with i 7 rays; anal with iii 8 rays, originating far in advance of the second dorsal; caudal fin feebly emarginate, the peduncle stout; pectoral fin long and falciform, with 15 rays; axillary scale short, the pore inconspicuous; outer ventral ray not longer than the second, the inner free. Gill-rakers numerous, slender, rather short. [*Squalus*, a shark; *mugil*, a mullet: in allusion to its flattened head and inferior mouth].

Coast of Queensland.

Type *Mugil nasutus* de Vis.

## SPHYRÆNIDÆ.

### SPHYRÆNA WAITII sp. nov.

#### WAITE'S SEA-PIKE.

D. v, i 9; A. ii 9; Sc. 11—128—14; L. l. 128; Vert. 12 + 12 = 24. Body robust and somewhat compressed, its width  $\frac{4}{5}$  of its depth, which is  $\frac{1}{7}$  of its length. Depth of head rather less than the postorbital region, its length a little more than  $\frac{1}{3}$  of that of the body. Diameter of eye  $2\frac{1}{2}$  in the length of the snout and  $5\frac{1}{2}$  in that of the head. Interorbital region feebly convex, mesially traversed by a pair of low, widely divergent ridges, which extend in slightly convergent lines on the snout as far as the level of the premaxillary processes, where they again become divergent; interorbital width  $6\frac{1}{4}$  in the length of the head. Maxillary not reaching to the vertical from the eye, from which it is distant  $\frac{2}{5}$  of a diameter, its length  $\frac{3}{7}$  of that of the head, its greatest width, which is at the upper predistal angle, rather less than half the eye. Lower jaw without fleshy appendage. Premaxillaries with about 60 small subequal teeth on each ramus, divided into irregular groups by the occasional absence of a tooth; anteriorly with two pairs of large cultriform canines, the anterior pair erect, the posterior pair much the larger and strongly declined backwards: palatine bones with 3 strong compressed trenchant teeth anteriorly, succeeded by a row of small teeth: mandible with a series of 14 widely separated teeth, about 7 of which, on and behind the middle of the jaw, are somewhat enlarged; a single median compressed canine, directed backwards, anteriorly. Opercle without spinous point. A single elongate gill-raker on the lower branch of the anterior arch just in front of the angle, its length  $\frac{3}{8}$  of the diameter of the eye. Cheeks and opercles scaly; upper surface of head naked. Spinous dorsal originating above the tip of the appressed pectoral, its distance from the tip of the snout  $2\frac{1}{8}$  in the length of the body; dorsal spines weak and flexible, the 1st. and

2nd. equal and highest,  $\frac{7}{9}$  of the length of the snout; soft dorsal much lower than the spinous, from which it is separated by an interspace, which is rather more than twice the length of its base: anal originating a little behind and somewhat shorter than the dorsal: lower caudal lobe slightly the longer,  $5\frac{1}{3}$  in the length of the body; least depth of caudal peduncle rather more than the eye: pectoral with 13 rays,  $\frac{3}{4}$  of the length of the snout and  $\frac{1}{5}$  of that of the body: ventral inserted well behind the pectoral, below the middle of the spinous dorsal, and midway between the tip of the mandible and the rudimentary rays of the caudal; hinder border truncate; spine slender and nearly as long as the outer ray, which is  $\frac{5}{8}$  of the snout. Green above, silvery below: soft dorsal and caudal yellow, the latter with a broad posterior blackish marginal band. [Named for Edgar R. Waite, author of many valuable papers on Australian biology].

Type in the Queensland Museum.

Total length of type 250 millimeters.

Coast of New South Wales. [Port Jackson District].

Some years ago Waite (Rec. Austr. Mus., iii, 1900, p. 210) called attention to certain discrepancies between the description of *Sphyræna novæ-hollandiæ* in my work on the "Edible Fishes of New South Wales" and that of its original describer, and remarked that "it is possible that we may have a third species in New South Wales." This supposition is fully borne out by the specimen now before me, in which the positions of the spinous dorsal and ventral fins are very different; the form is much more robust, the eye larger, the pectoral much longer, etc.

## BERYCIDÆ.

### OSTICHTHYS AUSTRALIS (Castelnau).

#### CASTELNAU'S SQUIRREL-FISH.

*Myripristes australis* Castelnau, Res. Fish. Austr., p. 4, 1875: Cape York.

D. xi 15 or 16; A. iv 13; P. 15 or 16. Sc. 3—28— $6\frac{1}{2}$ . Depth of body  $2\frac{1}{8}$ , length of head 3 in the length of the body. Snout  $2\frac{3}{8}$  in the diameter of the eye, which is  $\frac{1}{2}$  of the length of the head. Interorbital region flat, its width  $1\frac{7}{8}$  in the diameter of the eye. Maxillary extending to below the hinder border of the pupil, its length  $1\frac{2}{3}$  in that of the head, the width of its distal extremity  $2\frac{1}{3}$  in the diameter of the eye. Hinder limb of preopercle linear and vertical with a moderate inclination forward and feebly serrated, the broadly rounded angle and lower limb evenly and much more strongly serrated; opercular spine short, with several denticulations

above it. Upper surface of head with a pair of median longitudinal ridges, which commence on the sides of the postorbital processes, run parallel to one another but well separated to the middle of the interorbital region, where they gradually diverge to form gentle curves, which enclose a narrow spatulate area; the posterior convergent portions do not, however, meet, and are separated from the short nuchal ridge by a considerable hiatus: a well developed supranasal ridge forming a V-shaped band, with the premaxillary ridge: supraciliary ridges smooth in front, feebly denticulate behind: a supplementary ridge leaves the supraciliary ridge opposite to the middle of the eye and on the temporal region breaks up into several divergent ridges, one or more of which may be branched; all these ridges are smooth but end in a blunt point: articular bones with coarse, smooth, flabelliform striae. Dorsal fin originating above the opercular membrane; 4th. spine longest, longer than the eye,  $1\frac{6}{7}$  in the length of the head and  $1\frac{2}{3}$  in that of the 2nd. ray; last dorsal spine  $\frac{2}{3}$  of the longest. Anal originating below the last dorsal spine, the 4th. spine longer but much weaker than the 3rd., 2 in the length of the head and  $1\frac{3}{5}$  in the 2nd. ray, which is a little longer than that of the dorsal. Middle caudal rays  $2\frac{1}{7}$  in the upper lobe, which is  $3\frac{1}{3}$  in the length of the body; least depth of peduncle  $1\frac{3}{5}$  in the diameter of the eye. Pectoral fin extending to the vertical from the vent,  $1\frac{1}{5}$  in the length of the head. Ventral shorter than the pectoral, reaching the vent. Gill-rakers 13+27, the longest  $\frac{1}{2}$  the diameter of the eye. Pale yellow, each scale of the back with a broad reddish brown band, which covers the whole scale except a narrow basal bar; on the sides the dark band gradually decreases in width until below the lateral line it is represented only by a narrow median vertical bar, which finally disappears: head above brownish yellow, the ridges darker: fins hyaline, the pectoral with a dark axillary spot, which is continued downwards to cover all the upper half of the base posteriorly. [*australis*, southern].

Type in the Queensland Museum.

Described from two spirit specimens, measuring respectively 100 and 105 millimeters, and labeled "Coast of Queensland."

#### OSTICHTHYS SPINICEPS sp. nov.

##### SPINY-HEADED SQUIRREL-FISH.

D. xi 14; A. iv 12; P. 15. Sc. 3—28— $6\frac{1}{2}$ . Depth of body  $2\frac{1}{2}$ , length of head  $2\frac{3}{4}$  in the length of the body. Snout rather less than  $\frac{1}{2}$  the diameter of the eye, which is  $2\frac{2}{5}$  in the length of the head.



Interorbital region feebly convex, its width  $2\frac{1}{6}$  in the diameter of the eye. Maxillary extending to well behind the pupil, its length  $1\frac{2}{3}$  in that of the head, the width of its distal extremity  $1\frac{1}{2}$  in the diameter of the eye. Preopercle as in *O. australis*, but with 5 much enlarged denticles at the angle; opercular spine longer and stronger than in that species. Median ridges of head in contact on the snout; supraciliary ridges denticulated in front and behind; all the cephalic ridges terminating in a strong spine; lower branch of temporal ridge with two postmedian spines; otherwise as in *O. australis*. Dorsal fin inserted above the opercular membrane; 3rd. and 4th. spines equal and longest, as long as the eye,  $2\frac{2}{5}$  in the length of the head and  $1\frac{2}{3}$  in that of the 3rd. and longest ray; last dorsal spine  $\frac{2}{3}$  of the longest. Anal fin originating below the 10th. dorsal spine, the 3rd. spine longer and much stronger than the 4th., its length  $2\frac{1}{5}$  in the head and  $1\frac{1}{2}$  in the 2nd. ray; both spines and rays longer than those of the dorsal. Middle caudal rays  $2\frac{1}{3}$  in the upper lobe, which is  $\frac{1}{3}$  of the length of the body; least depth of caudal peduncle  $1\frac{2}{5}$  in the diameter of the eye. Pectoral fin not extending to the vertical from the vent,  $1\frac{1}{3}$  in the length of the head. Ventral as long as the pectoral, reaching the vent. Gill-rakers 14+28, the longest about  $\frac{1}{2}$  the diameter of the eye. Yellowish brown above, each of the scales with a broad violet band posteriorly; sides and lower surfaces yellow, the edges of the scales darker. [*spina*, spine; *ceps*, head: the cephalic ridges being spinose].

Type in the Queensland Museum.

Described from a specimen, 133 millimeters long, collected in the South Sea Islands by Capt. Charles F. Browne, and presented by him to the Museum.

#### HOLOCENTRUS ANGUSTIFRONS sp. nov.

##### NARROW-FRONTED SQUIRREL-FISH.

D. xi 11; A. iv 7; P. 12. Sc. 4—41—8. Depth of body  $3\frac{3}{4}$ , length of head  $2\frac{8}{9}$  in the length of the body. Snout deeply emarginate in front,  $1\frac{3}{4}$  in the diameter of the eye, which is  $2\frac{1}{2}$  in the length of the head. Interorbital region slightly concave, its width equaling the snout. Maxillary extending to a little beyond the middle of the eye, its length  $2\frac{1}{3}$  in that of the head, the width of its distal extremity  $\frac{1}{3}$  of the diameter of the eye; premaxillary processes extending to between the anterior borders of the pupils, their length  $\frac{1}{5}$  of the diameter of the eye; lower jaw the longer; preorbital strongly serrated, the anterior spine very stout and

triangular; hinder limb of preopercle linear and nearly vertical, finely serrated as also is the oblique lower limb; preopercular spine short, reaching but little beyond the border of the subopercle, with a strong double median ridge,  $2\frac{4}{5}$  in the diameter of the eye; a pair of strong opercular spines, with one or two denticles above them. Upper surface of head with a pair of median ridges, enclosing a concave porous area; supraciliary ridges smooth in front, and with two strong and several small spines behind; parietal region with about nine flabelliform ridges, temporal with one somewhat coarser ridge, all smooth but terminating in acute spines; articular bones with coarse somewhat anastomosing smooth striæ. Dorsal fin originating behind the opercle, the 1st. spine  $\frac{3}{4}$  of the 3rd., which is the longest,  $\frac{1}{2}$  of the length of the head and  $\frac{9}{10}$  of the 2nd. and 3rd. rays, which are equal and longest; last spine but little longer than the 10th.,  $3\frac{3}{4}$  in the longest spine. Anal originating below the 4th. dorsal ray; 4th. spine stronger and nearly as long as the 3rd. dorsal spine,  $1\frac{3}{5}$  in the 3rd. spine, which is  $3\frac{6}{7}$  in the length of the body; 2nd. ray longest, scarcely so long as the longest dorsal ray. Middle caudal rays  $2\frac{1}{2}$  in the upper lobe, which is  $4\frac{1}{7}$  in the body: least depth of peduncle  $1\frac{3}{4}$  in the diameter of the eye. Pectoral fin extending to below the 7th. dorsal spine,  $1\frac{2}{5}$  in the length of the head. Ventral a little shorter than the pectoral, but reaching considerably further back, to midway between its origin and the base of the 3rd. anal ray. Gill-rakers 1+6, with some tubercles on both branches, the longest  $4\frac{1}{4}$  in the diameter of the eye. Colors after long immersion in alcohol and exposure to the light—yellowish silvery, with traces of about eight darker longitudinal bands; each of the scales of the back above the lateral line with a chestnut basal spot, which diminishes in size posteriorly until beyond the spinous dorsal it is broken up into numerous fine dots: upper surface of head brown; scales of cheek similar to those of the back: fins immaculate. [*angustus*, narrow; *frons*, forehead, i.e. interorbital region].

Described from a specimen measuring 153 millimeters, presented to the State Museum by Capt. C. F. Browne, who obtained it at New Britain.

The species belongs to the *sammara-læve* group, but may easily be distinguished from either of those species by the narrow interorbital region, which in both of them measures  $\frac{2}{3}$  of the eye as against only  $\frac{1}{4}$  in this species. The number of longitudinal series of scales is also greater, of pectoral rays fewer, the premaxillary groove is shorter, the preopercular spine is strongly ridged and extends beyond the subopercular border, etc.

## PSEUDOCROMIDIDÆ.

## PSEUDOCROMIS WILDII sp. nov.

D. iii 27; A. iii 14. Sc. 2—37—14; L. l. 25 + 8. Dorsal profile strongly arched, the ventral nearly straight; depth of body  $2\frac{2}{3}$ , length of head  $3\frac{1}{10}$  in the length of the body. Snout rounded,  $1\frac{1}{7}$  in the diameter of the eye, which is  $3\frac{1}{2}$  in the length of the head. Interorbital region convex, its width  $5\frac{1}{5}$  in the head. Maxillary extending to a little beyond the anterior border of the eye. 3rd. dorsal spine the longest,  $\frac{2}{3}$  of the diameter of the eye and  $\frac{2}{7}$  of the longest rays, which are in the last quarter of the fin. Anal originating below the 9th. dorsal ray. Caudal fin rounded,  $\frac{1}{4}$  of the length of the body: least depth of caudal peduncle  $2\frac{2}{5}$  in the depth of the body. Pectoral fin with 16 rays, extending to the 14th. body-scale, its length  $3\frac{2}{3}$  in that of the body. 2nd. ventral ray the longest, as long as the pectoral and extending to the vent. Upper lateral line ceasing below the 18th. dorsal ray. Dark golden brown, each of the body scales with a blackish median spot, forming lines; opercular region lighter: fins uniform dark brown. [Named for Mr. Charles James Wild, Acting Curator of the Queensland Museum, to whom I am indebted for the opportunity of describing the fishes contained in this paper].

Type in the Queensland Museum.

Total length 64 millimeters.

Moreton Bay, Queensland.

## DAMPIERIA LONGIPINNIS sp. nov.

D. ii 35; A. iii 19. Sc. 1—55—16; L. l. 44 + 7. Ventral profile much more arched than the dorsal, which is nearly straight behind the nape; depth of body  $3\frac{1}{4}$ , length of head  $3\frac{3}{5}$  in the length of the body. Upper profile of head obliquely linear, the nape convex; snout rounded,  $\frac{5}{6}$  of the diameter of the eye, which is  $3\frac{1}{6}$  in the length of the head. Interorbital region convex, its width  $5\frac{1}{4}$  in the head. Maxillary extending to the vertical from the anterior border of the eye. Second dorsal spine the longer, rather more than the diameter of the eye and  $\frac{1}{2}$  of the longest ray, which is in the last quarter of the fin. Anal fin originating below the 17th. dorsal ray. Caudal fin pointed,  $2\frac{1}{2}$  in the length of the body, the least depth of the peduncle  $\frac{1}{2}$  of the depth of the body. Pectoral fin with 18 rays, extending to below the 25th. scale of the lateral line, its length  $3\frac{5}{6}$  in that of the body. Second and third ventral rays equal and longest,

$4\frac{1}{2}$  in the length of the body and reaching to the vent. Upper lateral line terminating below the 26th. dorsal ray. Uniform pale reddish brown, the fins somewhat darker. [*longus*, long; *pinna*, a fin].

Type in the Queensland Museum.

Total length 96 millimeters.

Coast of Queensland.

Described from an example obtained many years ago at Bowen; two smaller specimens were taken at the same time, but are unfortunately in bad condition.

The generic name *Cichlops* Müller & Troschel, 1849, being antedated in birds by *Cichlops* (= *Anthus*) Hodgson, 1844, and therefore inadmissible, Gill (Proc. U. S. Nat. Mus., xxviii, 1905, p. 119) proposed to resurrect *Labracinus* Schlegel. But this genus was never described nor even referred to any type, and in fact was not published until some years after its MS. attachment to specimens in the Leyden Museum. It is therefore but just that Castelnau's name *Dampieria* (Res. Fish. Austr., p. 30, 1875) having been fully diagnosed should receive recognition.

## CALLIONYMIDÆ.

### CALLIONYMUS LIMICEPS sp. nov.

#### ROUGH-HEADED SCULPIN.

B. vi. D. iv 9. A. 9. C. 10. P. 18-19. V. i 5. Body much depressed, its depth  $10\frac{1}{2}$  to  $12\frac{1}{2}$ , its width 6 to  $6\frac{1}{2}$  in the total length. Lateral line originating a little above and behind the gill-opening; thence bent downwards and outwards to a level with the base of the pectoral, from which it takes an irregularly undulating course to and slightly beyond the middle of the base of the caudal; nuchal line inconspicuous in the adult; occipito-parietal line passing forward above the gill-opening from the origin of the lateral line to the postero-inferior angle of the eye, where it curves downwards to form a wavy line across the suborbital region, but does not reach the angle of the mouth; opercular system consisting of a bifurcate line, which diverges from the occipital line } midway between the gill-opening and the eye, the anterior branch passing directly downwards to the base of the preopercular spine, the posterior backwards and downwards across the front half of the opercle, over which it distributes radiating canals. Head strongly depressed, its depth  $2\frac{1}{2}$  to 3 in its width, its length 3 to  $3\frac{1}{2}$  in the total length. Snout short or moderate, with feebly convex profile, its width at the corners of the mouth greater than its length in the adult male, equal to or less in the female and young. Upper jaw the longer;



maxillary not reaching to the vertical from the eye. Teeth in the upper jaw in a broad band which is of equal width throughout, very fine sharp and densely crowded, the two outer series on each side posteriorly greatly enlarged and recurved; those of the lower jaw all small, the band decreasing in width to a single series posteriorly and extending much further back than the premaxillary band. Space between the inner anterior angles of the preorbitals as wide as the eye, its edge truncated or emarginate. Diameter of eye 1 to  $1\frac{3}{5}$  in the length of the snout,  $2\frac{3}{4}$  to  $3\frac{1}{5}$  in the width of the head, and  $3\frac{1}{5}$  to 5 in the length of the same. Interorbital region narrow, one fourth or less than one fourth of the diameter of the eye, forming a deep groove between the strongly developed supraciliary ridges. Preopercular spine strong, a little shorter than the eye, extending backwards to or slightly beyond the level of the gill-opening, its distal extremity strongly curved upwards, the upper border with a single rather slender antorsely curved barb; lower border with a much stronger barb directed outwards and forwards and inserted mesially. Occipital armature consisting of a pair of bucklers from which in the adult radiate in every direction series of short dentiform processes, which not only form a file-like protection to the occiput, but extend forward along the entire supraciliary ridge, and often form a small patch anteriorly on the mesial line of the nape; in younger specimens the armature is usually reduced to a few coarse striæ directed inwards and backwards, between which and on the anterior facies of the bucklers are fine raised reticulated lines.\* Spinous dorsal inserted midway between origin of soft dorsal and posterior border or (in large males) middle of eye; in the male all the spines end in slender filaments, the length of which is subject to great individual variation;† the two first are, however, always elongate, the last comparatively short; in the series before me the extension of the first spine varies from the base of the eighth dorsal ray to that of the caudal fin, its length being from two-thirds to one-half of the length of the body; the second spine extends to between the base of the fourth ray and the middle of the caudal peduncle;‡ the third to between the origin and the end of the soft dorsal;§ in the female the spines are graduated from the first, the

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\* The strength of the armature does not seemingly always correspond with other characters of the adult, for in the type specimen, a small male with the dorsal spines more developed than in any other example, which I have as yet seen, the occiput is nearly smooth.

† This variation is in no wise dependent upon the size of the fish.

‡ These outside measurements belong to the two smallest examples in the collection the large ones being intermediate.

§ The longer of these two measurements is taken from a small, the shorter from a large example.

height of which is equal to or a little more than the space between its origin and the orbit: free space between the dorsals about as long as the gill-opening: origin of soft dorsal about as far from the tip of the snout as from the middle of the caudal peduncle; its outer border is feebly emarginate, the fourth, fifth, and sixth rays the shortest, the first subequal to the eighth; the last the longest, much less produced in the females and young males than in adult males, in which it extends well beyond the base of the caudal. Anal originating below the second dorsal ray, lower than the soft dorsal, its rays graduated from first to last, which is not produced, and reaches to or nearly to the caudal. Caudal fin with two upper and three lower rays simple; middle rays the longest,  $2\frac{3}{4}$  to 3 (in the male),  $3\frac{2}{5}$  to  $3\frac{1}{2}$  (in the female) in the length of the body. Pectoral fins inserted below the anterior half of the spinous dorsal; the outer border concave above, feebly convex below; middle rays the longest, much less than the width of the head. First ventral ray  $2\frac{2}{5}$  in the length of the fourth or fifth, which are subequal, 4 to  $4\frac{1}{3}$  in the length of the body and extend to or not quite to the origin of the anal. Gill-openings transversely oval, protected anteriorly by a fold of the opercular membrane, equidistant from the eye and the origin of the spinous dorsal, but nearer to the latter than to the pectoral, which distance is as long as the space between the gill-openings. Pharyngeal teeth molariform.

Coloration:—(After long immersion in alcohol). Pale brown above, with numerous inconspicuous lighter spots; sides yellowish, uniform or with brown vertical bars; lower surface dull whitish. Spinous dorsal grayish or pale brown, usually with a dark brown spot on the membranes of the second or third rays, and sometimes with an angular band above the spot; filaments with brown and white annuli throughout their whole length; in the female the fin is dark brown, usually the first ray and sometimes the base white or pale brown; second dorsal hyaline, each ray with two or three brown spots; basal two thirds of the fin with a few clouded purplish blotches, and in the male the outer third with a few narrow wavy oblique lines between the rays; outer edge of anal smoky, the rays and the base whitish: caudal with a few brown or purplish spots and blotches: upper pectoral rays with brown and white annuli: ventral fins hyaline; the rays pale brown, with a few small reddish brown spots or short lines. (*lima*, a file; *ceps*, head).

Total length 120 millimeters.

Types in the Queensland Museum.

Moreton Bay, Queensland.

Numerous specimens of this fine callionymid were collected by Messrs. Wild and Broadbent in September 1892; they are in bad condition. The species has not been noticed since.

The handsome species here described is closely allied to the Japanese *Callionymus lunatus* Schlegel,\* which differs from it in the following characters:—the head is apparently much less depressed, the lower preopercular barb is small and basal, the occiput is smooth, the gill-openings are round and nearer to the origin of the spinous dorsal than to the eye, only the first dorsal spine is filiform, the last ray of the soft dorsal and anal fins is not produced, or only slightly so in the adult male; the spinous dorsal has a black ocellus posteriorly in the male, while the membrane of the first spine is light colored in the female.

In this connection it may be interesting to mention that within the last two years I have handled three fine male examples of the little known *Dactylopus dactylopus* (Cuvier & Valenciennes)†, all from Moreton Bay. Two of these are in the State Museum, the third in that of the Amateur Fishermen's Association, to whom it was presented by Mr. Matthew Colclough of Wynnum. Hitherto the species has been known only from the Celebes and Amboina.

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\* Faun. Japon., Pisc. p. 155, pl. lxxxviii, fig. 4, 1845; Jordan & Fowler, Proc. U. S. Nat. Mus., xxv, 1903, p. 949, fig. 5.

† Hist. Nat. Poiss., xii, p. 310.

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# REVISION OF THE BATRACHOIDIDÆ OF QUEENSLAND.

By J. Douglas Ogilby.

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## FAMILY BATRACHOIDIDÆ.

### THE FROG-FISHES

Body robust, depressed or cylindrical anteriorly, thence tapering gradually to the tail, which is more or less strongly compressed. Scales, when present, small and cycloid. One or more lateral lines, the pores with or without cutaneous appendages. Head large, broad and depressed, the muciferous system strongly developed and tentaculated, those of the jaws and supraciliary region usually the longest. Mouth large or moderate, protractile. Dentition varying from a single series of obtusely conical teeth to narrow bands of small cardiform teeth. Opercle always, subopercle often armed with one or two strong spines. Two dorsal fins, the first short, with 2 to 4 spines, which are wholly concealed beneath the skin; soft dorsal long, with numerous branched rays, enveloped in loose folds of skin; anal fin similar but shorter: caudal fin usually free, rounded or cuneiform: pectoral short and broad, multiradiate, with muscular, vertical base; all the rays attached to the pterygials: ventral rather long, jugular, with a short, concealed spine and 2 or 3 rays. Gill-openings rather narrow, mostly restricted to the sides immediately in front of the pectoral fins; gill-membranes broadly united to the isthmus; branchiostegals six; no pseudobranchiæ; gills three, a slit behind the last; gill-rakers feeble, sometimes tubercular; pharyngeal bones separate, armed with acute cardiform teeth; air-bladder divided into two portions, which lie side by side, and are connected posteriorly by a slender tube. Stomach siphonal; no pyloric cæca. Posterior processes of the premaxillaries well developed, in contact with the inner angle of the frontal; suborbital



without bony stay; posttemporal small and undivided, ankylosed to the skull; tail diphycecal. Vertebrae 27 to 43, the precaudal without distinct transverse processes. [Βάτραχος, a frog; εἶδος, resemblance].

The *Batrachoididæ* form a small but distinct family, related on the one hand to the *Blenniidæ* and on the other to the *Congrogadidæ*. They may be briefly described as—carnivorous ground-fishes of small or moderate size, inhabiting all intertropical and juxtatropical seas. Most of the species show a marked partiality for muddy ground, into which they burrow with great facility when danger threatens. They are for the most part littoral fishes, and even to some extent ascend tidal rivers, but many instances are on record of their capture at depths closely approaching the hundred-fathoms line. While not disdaining aught else, which chance may put in their way, their principal food consists of crustaceans and mollusks, the hard integuments of which their exceptional strength of jaw enables them to crush with ease. Like all other fishes in which the powers of locomotion are limited, they are compelled to resort to strategy in order to obtain in sufficient quantity even this comparatively slow-moving prey; they are, therefore, in the habit of burying themselves in the mud leaving only a part of the head exposed, and possibly using the oral and supraciliary tentacles as lures for the unwary, much in the same manner as the angler-fishes (*Antennariidæ*) employ the rostral tentacle. When living on ground into which they are unable to burrow weeds serve the same purpose of concealment, and in either case the normal pattern of their coloration blends so thoroughly with their surroundings that detection is extremely difficult so long as they remain motionless. A very curious habit is mentioned by Gilbert—than whom no more acute and trustworthy observer ever lived—when writing of one of our common Queensland species (*Coryzichthys diemensis*). He states that it—“is an inhabitant of the mud at the head of the harbor of Port Essington, where it may be frequently seen creeping over the surface after the tide has left. It is very difficult to capture, for on the slightest appearance of danger it plunges down instantaneously” (*Richardson, Ann. & Mag. Nat. Hist.*, xi, 1843, p. 352). Though the flesh is firm, white, and to all appearance tempting to the palate, these fishes are rejected as food by all except the very poorest classes; it is probable that their rather repulsive appearance may be to a large extent responsible for this repugnance; personally I have had no opportunity of testing their quality, but I am not aware of any practical reason why they should not be excellent eating. The ova of the frog-fishes are large, round, and few in number; they are probably attached either singly or in bunches to weeds or stones at the bottom,

but on this point no definite information is at present available. I have had the opportunity on three occasions of examining females in which the ova were fully matured, and improved the occasion by ascertaining the number and dimensions of the eggs; these are contained in a pair of oval sacs formed of delicate and transparent but strong tough and elastic tissue. In my first specimen (*a*), a *Batrachomæus minor*, caught in May, length 186 millim., the left ovary carried 62 eggs measuring from 3·5 to 5 millim. each; in (*b*), a *Coryzichthys diemensis* of 146 millim. in length, the right ovary contained 45 eggs with a size of from 4·5 to 5 millim. apiece; while the numbers in both ovaries of (*c*)—same species, length 160 millim. was  $35+39=74$ , measuring from 5·5 to 6·5 millim.; unfortunately no record of the date of capture is available in these two latter cases. In all three the enveloping skin was intact, proving that the full complement of ova were still *in situ*. The voracity of these fishes may be conceived from the fact that a specimen of *Batrachomæus minor* in my possession had swallowed an octopus of so large a size that two of the arms were protruding fully an inch from its mouth, nevertheless this did not deter it from taking a prawn bait, and thereby paying the penalty of its gluttony. Thirty-five valid species distributed among ten genera are recognized in this review; of these no less than seven genera and twenty-one species are confined to American waters,\* and it is a remarkable fact that the number of soft dorsal and anal rays and of vertebrae found in the New World forms invariably exceeds those which obtain in the Old World fishes. Three of the American genera—*Thalassophryne*, *Dæctor*, and *Thalassothia* are of special interest. In the seven species which represent them the opercular and dorsal spines are perforated by a canal, having a basal and subterminal aperture, such as is the case among the viperine snakes; opposite the basal aperture of each spine lies a venom sac so arranged that the slightest pressure on the tip causes the poison to spurt forth into the wound inflicted thereby. Although the results of the poison are frequently severe I am not aware of any accident so received terminating fatally. The frog-fishes are chiefly taken by hook and line, fish-trap, or seine net.

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\* The sole exception to this general rule occurs in the case of the West African *Batrachus liberiensis* Steindachner. Though I am unacquainted with the description of this species I would have placed it unhesitatingly in my proposed genus *Halobatrachus* (*vide Key infra*), if it were not for the following remark of Dr. Günther (*Zool. Rec.*, iv, 1867, *Pisc.* p. 164).—" *Batrachus pacifici* appears to occur also in the Atlantic, as it has been described from a West African example as a new species *B. liberiensis* by Dr. Steindachner." On this account I am forced to include the species in the American genus *Batrachoides*, characterised among other things by the absence of an axillary pore.

## KEY TO THE GENERA OF THE BATRACHOIDIDÆ.

- a. Spines solid, without poison-sacs.
- b. Body covered with small cycloid scales; vertebræ 12 + 17 = 29.
- c. Three dorsal spines.
- d. Dorsal rays 25 to 29; anal 21 to 26; no axillary pore... i. *Batrachoides*.\*
- dd. Dorsal rays 17 to 21; anal 14 to 17; an axillary pore... ii. *Halobatrachus*.†
- bb. Body scaleless.
- e. Dorsal spines three; no canine teeth.
- f. An axillary pore; teeth uniserial, strong and conical.
- g. Dorsal rays 26 to 28; anal 22 to 24; vertebræ 12 + 22 = 34.  
iii. *Opsanus*.
- gg. Dorsal rays 18 to 22; anal 15 to 18; vertebræ 9 + 18 = 27 or  
12 + 17 = 29 ... iv. *BATRACHOMÆUS*.
- ff. No axillary pore.
- h. Dorsal rays 28 to 30; anal 22 to 24; teeth short and very blunt;  
vertebræ? ... v. *Marcgravia*.
- hh. Dorsal rays 19 to 22; anal 15 to 18; teeth in narrow bands, acute  
and cardiform; vertebræ 10 + 17 = 27 ... vi. *CORYZICHTHYS*.
- ee. Dorsal spines two; canine teeth present on the vomer; vertebræ  
12 + 31 = 43 ... vii. *Porichthys*.
- aa. Spines hollow, each connected with a poison-sac.
- i. Dorsal spines two.
- j. Dorsal and anal fins free from the caudal ... viii. *Thalassophryne*.
- jj. Dorsal and anal fins fully united to the caudal ... ix. *Dæctor*.
- ii. Dorsal spines four ... x. *Thalassothia*.

The new genus *Halobatrachus* is here proposed to accommodate *Batrachus didactylus* and its allies from the Eastern Atlantic, and bears the same relationship to *Batrachoides* as *Opsanus* does to *Marcgravia* and *Batrachomæus* to *Coryzichthys*.

I. *BATRACHOMÆUS* gen. nov.

? *Pseudobatrachus* Castelnau, Res. Fish. Austr., 1875, p. 24 (*striatus*). No description.

Body depressed anteriorly, without scales. Three inconspicuous lateral lines, the pores without cutaneous appendages. Mouth with wide horizontal cleft, the lower jaw projecting; maxillary extending to below the hinder border of the eye. Jaws with a single series of conical teeth, those of the mandible much the stronger; usually a few smaller teeth at the symphysis in front of the functional series: vomerine and palatine teeth strong, arranged in a continuous band, the former sometimes biserial. Eyes of moderate size, superolateral. Opercle with two strong spines; subopercle normally with two

\* The italicized genera are exotic.

† ἅλς, gen. ἁλός, sea; βάτραχος, a frog.

spines, the lower much the longer, the upper short and divergent, often absent. Gill-opening moderate, embracing the base of the pectoral fin; gill-rakers tubercular; pharyngeal teeth unequal in size, acute and cardiform. Dorsal fins with iii, 18 to 22 rays, the middle spinous ray the longest: anal fin similar to but shorter than the soft dorsal, with 15 to 18 rays: caudal fin free, rounded or cuneiform. Axillary pore present. Frontal ridges strongly developed; transverse ridge linear; occipital ridge feeble; basis cranii evenly rounded. Vertebrae  $9 + 18 = 27^*$  (*βάτραχος*, a frog; *ὄμοιος*, like).

Coasts of India, Malaysia, Australia, and Southern New Guinea, entering tidal rivers. Voracious fishes of small or moderate size, living at the bottom, and partial to muddy localities where the water is more or less obscured. Species three.†

*Key to the Australian Species.*

- a. Dorsal rays 19 or 20, anal rays 16; no frontonasal tentacle; supraciliary tentacles small; axillary pore large.
  - b. Diameter of eye more than interorbital width, which is  $6\frac{2}{3}$  in the head; vomerine teeth uniserial; one subopercular spine ... 1. MINOR.
  - bb. Diameter of eye less than interorbital width, which is  $5\frac{1}{3}$  in the head; vomerine teeth biserial; two subopercular spines ... 2. CECUS.
- aa. Dorsal rays 21 or 22, anal rays 18; a frontonasal tentacle; supraciliary tentacles large; axillary pore minute.
  - c. Diameter of eye rather less than interorbital width, which is  $6\frac{1}{3}$  in the head; vomerine teeth uniserial; two subopercular spines ... 3. BROADBENTII.

# 1. BATRACHOMÆUS MINOR.

? *Batrachus dubius* Richardson, Zool. Erebus & Terror, Fish. 1845, p. 16, pl. x: Port Jackson—Günther, B.M. Catal. Fish., iii, 1861, p. 169.—Macleay, Proc. Linn. Soc. N. S. Wales, v, 1880, p. 572. Not *Lophius dubius* White, 1790.

*Batrachus dubius* Alleyne & Macleay, Proc. Linn. Soc. N. S. Wales, i, 1877, p. 335: Sue Island, Torres Straits—Macleay, *ibid.*, viii, 1884, p. 267. Not *Lophius dubius* White, 1790.

? *Batrachus trispinosus* Kner, Reise Novara, i, 1865, Fisch. p. 189: Port Jackson. Not Günther, 1861.

? *Pseudobatrachus striatus* Castelnau, Res. Fish. Austr., 1875, p. 24: Cape York.

## LESSER FROG-FISH.

D. iii, 19 or 20; A. 16; Vert.  $9 + 18 = 27$ . Width of head equal to or rather more than its length, which is 2.75 to 3.00 in that of

\* According to Günther *Batrachus trispinosus* has  $12 + 17$  vertebrae (v. B.M. Catal. Fish., iii, p. 169).

† *Batrachus trispinosus* differs so much in the dentition of the jaws and in the number of the vertebrae ( $12 + 17$ , *vide* Günther, B.M. Catal. Fish., iii, p. 169), that I am uncertain as to whether it should rightly be referred to this genus.



the body. Diameter of eye 1.25 in the length of the snout and considerably more than the interorbital width, which is 6.65 in the head. Premaxillary and mandibular teeth biserial anteriorly, a few of the front ones in the former somewhat enlarged; vomerine teeth uniserial. A single subopercular spine. Oral tentacles moderate, those of the distal end of the maxillary the largest; no frontonasal tentacle; two short supraciliary tentacles; axillary pore large. Posterior dorsal and anal rays extending beyond the base of the caudal; caudal and pectoral fins rounded, the former 5.00, the latter 6.20 in the body; outer ventral ray .40 longer than the pectoral and 1.65 in the head. Above dark brown, blotched and marbled with lighter, below dull white; lower portion of tail with obscure whitish spots. Fins brown, the dorsal with two or three inconspicuous oblique whitish bars; anal with similar bars and the free tips of many of the rays white; caudal and pectorals with more or less pronounced indications of lighter transverse bars; outer ventral ray dull white, basally spotted with brown, inner brown. One example differs as follows—Above purple, largely blotched with lavender, below white the chin faintly dotted brown; lower half of the sides with numerous bluish spots. Dorsal and caudal fins like the back; anal lighter, tipped with purple; pectorals lavender, with obscure rows of lighter spots; outer ventral ray dull white, inner violet. (*minor*, lesser).

Type in the collection of the Amateur Fishermen's Association of Queensland; Cat. no. 348. Coll. & Pres. by Mr. J. T. Jameson.

Total length 188 millimeters.

A littoral and estuarine species from the East Coast of Australia (Cape York, Moreton Bay, ? Port Jackson), Sue Island, Torres Straits, and British New Guinea (Port Moresby).

This frog-fish is not uncommon in the lower reaches of the Brisbane River and the muddy foreshores of Moreton Bay. The five specimens which I have examined, measuring from 125 to 188 millim., all differ from the *Batrachus dubius* of authors in the shortness of the tentacles and the narrowness of the interorbital region, which is considerably less than the diameter of the eye. *B. dubius* (White) having apparently villiform teeth can not belong to *Batrachomæus*, and since his description and figure are worthless it would be better to drop the name altogether. As Castelnau's description is equally faulty—he does not mention the presence or absence of an axillary pore—his name is valueless, since it is impossible to say to what species he refers. I have, therefore, been obliged to give the small northern form a new name.

**2. BATRACHOMÆUS CÆCUS.**

*Thalassophryne cæca* de Vis, Proc. Linn. Soc. N. S. Wales, ix, 1884, p. 546 : Coast of Queensland.

**GREATER FROG-FISH.**

D. 19 or 20; A. 15 or 16; Vert  $9 + 18 = 27$ . Width of head rather more than its length, which is 3·00 of that of the body. Diameter of eye 1·50 of the length of the snout and much less than the interorbital width, which is 5·35 in the head. Premaxillary teeth biserial anteriorly; vomerine teeth biserial, obtusely conical, the posterior row the larger. Two subopercular spines, the upper small and divergent. Oral tentacles moderate and fringed, largest posteriorly; no frontonasal tentacle; one or two small supraciliary tentacles; axillary pore large. Posterior dorsal and anal rays not extending beyond the base of the caudal: caudal fin rounded, pectoral obtusely cuneiform, the former 5·50, the latter 6·60 in the body: outer ventral ray 35 longer than the pectoral, and 1·60 in the head. Above dark brown blotched with lighter, below pale brown blotched with bluish white; branchiostegal region mottled brown and white: dorsal, anal, caudal, and pectoral fins brown with lighter spots and bars; outer ventral ray dull white, the inner violaceous. (*cæcus*, blind).

Type in the Queensland State Museum, Brisbane.\*

Total length 300 millimeters.

East Coast of Queensland. (Moreton Bay and Cardwell). This is a deep water form, usually taken by hook on the offshore snapper banks.

**3. BATRACHOMÆUS BROADBENTI sp. nov.****BROADBENT'S FROG-FISH.**

D. iii, 21 or 22; A. 18. Width of head equal to its length, which is 2·75 to 3·00 in that of the body. Diameter of eye 1·50 of the length of the snout and a little less than the interorbital width, which is 6·35 in the head. Premaxillary teeth biserial, mandibular teeth triserial, anteriorly; vomerine teeth uniserial, acute and conical. Two subopercular spines, the upper small and divergent. Oral tentacles rather long and fringed; a frontonasal tentacle; three supraciliary tentacles, the posterior the longest, 1·50 of the diameter of the eye; axillary pore minute. Posterior dorsal and anal rays extending well beyond the base of the caudal: caudal fin cuneiform, pectoral rounded, the former 4·75, the latter 6·00 in the body: outer ventral ray 20 longer than the pectoral and 1·75 in the head. Above

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\* The type being a wretchedly mounted and distorted specimen, the description is taken from a very fine example in the A.F.A.Q. Museum, Brisbane, presented by Mr. J. Dowd: Cat. no. 170.

dark brown marbled with lighter, which on the tail may take the form of irregular transverse bands; below reddish brown, the under surface of the head penciled and dotted with pearl gray: dorsal and anal fins pale brown, with a marginal and some oblique bands darker brown; caudal and pectorals similar with dark brown transverse bars; ventrals pearl gray, tipped and barred with brown. [Named for Mr. Kendall Broadbent, the noted Australian and New Guinea explorer and collector].

Type in the Queensland State Museum, Brisbane.

Total length 255 millimeters.

East Coast of Queensland (Cardwell and Bundaberg). Described from two specimens collected respectively by Mr. Kendall Broadbent and Dr. T. H. May.

## II. CORYZICHTHYS gen. nov.

Body cylindrical anteriorly, without scales. Three well-marked lateral lines, each of the pores with a cutaneous appendage. Mouth with moderate horizontal cleft, the jaws equal; maxillary extending to below the middle of the eye. Jaws, vomer, and palatines with narrow bands of small, cardiform teeth. Eyes rather large, superolateral. Opercle with two spines; subopercle with two spines, the lower much the shorter, divergent, often absent. Gill-opening narrow, embracing the upper half of the pectoral fin only; gill-rakers few, short, acute, and conical; pharyngeal teeth unequal in size, acute, and cardiform. Dorsal fins with iii, 19 to 22 rays, the middle spinous ray the longest: anal fin similar to but shorter than the dorsal, with 15 to 18 rays: caudal fin free and rounded. No axillary pore. Interorbital region deeply concave, the frontal ridges feeble; transverse ridge crescentic; occiput and basis cranii strongly ridged. Vertebrae  $10 + 17 = 27$ . [*κόρυζα*, slime or mucus; *ἰχθύς*, a fish].

Small voracious fishes from the shores of India, Malaysia, Australia, and New Guinea. The weaker dentition of the species belonging to this genus suggests that their food may principally be chosen from worms, sand-fleas, and similar soft organisms, while the more brilliant coloration which is often observable in individual specimens shows that they are not averse to living on coral reefs.\*

\* While this paper was passing through the Press the Queensland Museum received from Mr. E. J. Banfield a beautiful example from Dunk Island, in which the richness of the various shades of brown, purple, and lilac is greatly accentuated, and which has in addition a brilliantly golden spot on each side of the head almost entirely covering the cheek and preopercle, and three similar blotches on each side of the back.

## 4. CORYZICHTHYS DIEMENSIS.

- ? *Lophius dubius* White, Voy. N. S. Wales, 1790, p. 265, c. fig. : Port Jackson, N.S.W.
- Batrachoides diemensis* Le Sueur, Journ. Acad. Nat. Sci. Phila., iii, 1823, p. 402 :
- Batrachus dussumieri* Cuvier & Valenciennes, Hist. Nat. Poiss., xii, 1837, p. 474, pl. ccclxvii: Malabar Coast—Günther, B. M. Catal. Fish., iii, 1861, p. 169—Alleyne & Macleay, Proc. Linn. Soc. N. S. Wales, i, 1877, p. 335—Klunzinger, Sitzb. Akad. Wien, lxxx, i, 1879, p. 386—Macleay, Proc. Linn. Soc. N. S. Wales, v, 1880, p. 573.
- Batrachus quadrispinis* Cuvier & Valenciennes, *ibid.*, p. 487 : Seas of India.
- Batrachus diemensis* Richardson, Ann. & Mag. Nat. Hist., xi, 1843, p. 352. & Zool. Erebus & Terror, Fish. 1845, p. 17, pl. viii, figg. 1 & 2—Bleeker, Nat. Tijds. Ned. Ind., iii, 1852, p. 168—Günther, *ibid.*, p. 170—Macleay, *ibid.*, ii, 1878, p. 355 & v, 1880, p. 573.
- Batrachus mülleri* Klunzinger, *ibid.*, p. 387 : Port Darwin, N. T.—Macleay, *ibid.*, ix, 1884, p. 29.
- Batrachus grunniens* Macleay, *ibid.*, vii, 1882, p. 360. Not *Cottus grunniens*, var. B, Linnæus, 1758.
- Porichthys queenslandiæ* de Vis, Proc. Linn. Soc. N. S. Wales, vii, 1882, p. 370 : Coast of Queensland.\*

## BANDED FROG-FISH.

D. 19 to 21; A. 16 or 17; Vert.  $10 + 17 = 27$ . Width of head rather less than its length, which is 2.75 to 3.00 in that of the body. Diameter of eye .20 more than the length of the snout and 3.75 in that of the head. Interorbital width 2.25 in the diameter of the eye and 8.25 in the head. Premaxillary teeth anteriorly in four, posteriorly in two series, those of the inner row the longest and strongly hooked; vomerine teeth in many irregular series; palatine teeth similar to the vomerine, but often with two or three much enlarged, isolated teeth on the inner edge of the bone at some distance from the outer band, which is biserial posteriorly; mandibular teeth pluriserial anteriorly, where the bone expands to form a rounded process directed forwards, behind which the band gradually narrows to a double row, the hinder teeth of which are much enlarged, erect, and compressed. Two opercular spines, the upper much the longer; one or two subopercular spines, the lower, when present, short.† Tentacles variable in length, the variance not dependent on age and sex; those surrounding the jaws usually rather short and simple,

\* The types of Mr. de Vis' proposed species are unfortunately missing, but I have no hesitation in referring it to this fish.

† Of twelve Queensland specimens examined the lower subopercular spine was absent in four; in one of these, however, the position of the base of the spine is plainly discernible below the surface, though not reaching the edge of the subopercular bone. There is absolutely no other difference between the three-spined *dussumieri* and the four-spined *diemensis*.



with the exception of a pair on the distal half of the maxillary, which are long and fringed; a series of mixed tentacles—simple or fringed, the latter the longer—around the edges of the opercular bones; three well developed supraciliary tentacles, which are usually bifid or trifid; a similar but smaller frontonasal tentacle; occiput with five regular longitudinal series of rather small tentacles; lateral line pores each with a small, usually bifid tentacle, forming three series on the body, the two lower of which are sometimes aborted.\* Caudal and pectoral fins rounded, the former 4.35, the latter 5.35 in the total length: outer ventral ray .25 longer than the pectoral and 1.25 of the length of the head. Coloration varying from violet to purplish black above and from pearl-gray to lilac below; tail usually with four broad, more or less connected lighter cross-bands, which are continued on the dorsal and anal fins, where they are inclined respectively forwards and backwards; sometimes the upper half of these bands is scarlet or orange, as also are the spinous dorsal and the cheeks; the bands are usually plentifully sprinkled with darker spots and dots; caudal fin lilac, with more or less conspicuous lighter transverse bars; pectorals and ventrals violaceous gray, with broad basal and median purple bands, or uniform purple. (*diemensis*, belonging to Van Diemen's Land, whence Le Sueur believed that his specimen came; it has not, however, been found there since).

Total length 220 millimeters.

From South-Western India (fide Valenciennes) to Eastern Australia and South-Eastern New Guinea. The Australasian records are as follows:—Timor (Bleeker); Houtmans Abrolhos, W.A., and Port Essington, N.T. (Richardson); Port Darwin, N.T. (Macleay & Klunzinger); Thursday Island, T.S. (Weber); Darnley Island and Cape Grenville, Q. (Alleyne & Macleay); Port Denison, Q. (Klunzinger); Port Moresby, N.G. (Macleay); ? Port Jackson,

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\* I have examined a specimen from Cardwell, length 166 millim., in which all the tentacles except the supraciliary were very short, and I consider Klunzinger's *Batrachus mülleri* to be merely an exaggerated example of this variety, in which for some reason the tentacles have not arrived at their full development. In an exceptionally fine six-inches specimen from Moreton Bay the upper lateral line commences behind the supraciliary tentacles, and passing immediately above the edge of the opercle, curves upwards over the pectoral, and running close to the base of the soft dorsal, terminates at the upper fourth of the base of the caudal: the middle line separates from the upper above the base of the pectoral, and curving downwards behind that fin runs along the middle of the side until just in front of the caudal fin where it bends upwards and reunites with the upper line; its pores are much fewer and more distant than those of the other lines, but the filaments are longer: the third line originates above the base of the ventral, curves slightly upwards beyond the tip of that fin, and passing close along the base of the anal finally terminates below the end of that fin.

N.S.W. (White & ? Steindachner); and ? Tasmania (Le Sueur). To these may be added the following Queensland localities—Somerset, Dunk Island, Cardwell, Gladstone, and Moreton Bay.

The Banded Frog-Fish is found everywhere along the coast of Queensland, but its southern limit is at present undefined. The Chevert expedition found it to be distributed "generally throughout Torres Straits," while the fact that at Port Moresby it has received the native name "Nohu" proves that it must be well known to the aboriginal population. Further eastward we learn from Gilbert that it is common at Port Essington, and as it is by no means scarce in Moreton Bay, we may safely consider it to be the most abundant and widely distributed species on our shores.

*List of the Species of Batrachoididæ.*

- i. **BATRACHOIDES** Lacépède, Hist. Nat. Poiss., iii, 1802, p. 306 (*tau* = *surinamensis*).

1. *boulengeri* Gilbert & Starks, Mem. Calif. Acad. Sci., iv, 1904, p. 182: Pacific Coast of Central America.
2. *goldmani* Evermann & Goldsborough, Bull. U.S. Fish. Comm., xxi, 1902, p. 159: Tabasco, Mex.
3. *pacifici* Günther, B.M. Catal. Fish., iii, 1861, p. 173: Pacific Coast of Panama.
4. *surinamensis* Bloch & Schneider, Syst. Ichth., 1801, p. 43: Surinam.

- ii. **HALOBATRACHUS** Ogilby, v. supra. Type, *Batrachus didactylus* Schneider.

5. *congius* Reichenow, Mon. Akad. Berlin, 1877, p. 622: Chinchoxo, W. Africa.
6. *didactylus* Bloch & Schneider, *ibid.*, p. 42: Mediterranean.
7. *liberiensis* Steindachner, Sitzb. Akad. Wien, lvi, 1867, p. 525: Liberia, W. Africa.

- iii. **OPSANUS** Rafinesque, Amer. Month. Mag., 1817, p. 203 (*cerapalus* = *tau*).

8. *argentinus* Berg, An. Mus. Buenos Aires, v, 1897, p. 300: Mouth of the Rio de la Plata.
9. *pardus* Goode & Bean, Proc. U.S. Nat. Mus., ii, 1879, p. 336: Pensacola, Fla.
10. *tau* Linnæus, Syst. Nat., ed. 12, 1766, p. 439: Carolina.

iv. **BATRACHOMÆUS** Ogilby, ut supra.

11. **BROADBENTI** Ogilby, ut supra.
12. **CÆCUS** de Vis, Proc. Linn. Soc. N. S. Wales, ix, 1884, p. 546 :  
Cardwell, Q. East Coast of Queensland.
13. **MINOR** Ogilby, ut supra.
14. *trispinosus* Günther, ibid., p. 169 : Indian Seas.

v. **MARCGRAVIA** Jordan, Proc. U. S. Nat. Mus., ix, 1886,  
p. 546 (*cryptocentra*).

15. *cryptocentra* Cuvier & Valenciennes, Hist. Nat. Poiss., xii, 1837,  
p. 485 : Bahia, Braz.

vi. **CORYZICHTHYS** Ogilby, ut supra.

16. *diemensis* Le Sueur, Journ. Acad. Nat. Sci. Phila., iii, 1823, p.  
402 : Tasmania. From South-Western India to Eastern  
Australia and South-Eastern New Guinea.
17. *gange* Buchanan, Fish. Ganges, 1822, pp. 34 & 365 : Ganges.
18. *reticulata* Steindachner, Sitzb. Akad. Wien, lx, 1870, p. 564 :  
Singapore.

vii. **PORICHTHYS** Girard, Proc. Acad. Nat. Sci. Phila., 1854,  
p. 141 (*notatus*).

19. *greenei* Gilbert & Starks, ibid., p. 184 :
20. *margaritatus* Richardson, Zool. Sulphur, Fish. 1845, p. 67 :  
Pacific Coast of Central America.
21. *notatus* Girard, ibid. ; San Francisco.
22. *porosissimus* Cuvier & Valenciennes, Hist. Nat. Poiss., xii, 1837,  
p. 501 : Surinam.
23. *porosus* Cuvier & Valenciennes, ibid., p. 506 : Coast of Chile.

viii. **DÆCTOR** Jordan & Evermann, Fish. N. & Mid. Amer.,  
pt. iii, 1898, p. 2325 (*dowi*).

24. *dowi* Jordan & Gilbert, Proc. U. S. Nat. Mus., x, 1887, p. 388 :  
Punta Arenas, S. Chile.

ix. **THALASSOPHRYNE** Günther, *ibid.*, p. 174 (*maculosa*).

25. *amazonica* Steindachner, *ibid.*, lxxiv, 1876, p. 161 : Rio Amazons.  
26. *maculosa* Günther, *ibid.*, p. 175 : Puerto Cabello.  
27. *nattereri* Steindachner, *ibid.*, : Rio Amazons.  
28. *punctata* Steindachner, *ibid.*, p. 160 : Rio Negros.  
29. *reticulata* Günther, Proc. Zool. Soc., 1864, p. 150 : Pacific Coast of Panama.

x. **THALASSOTHIA** Berg, An. Mus. Buenos Aires, iv, 1895, p. 67 (*montevidensis*).

30. *montevidensis* Berg, An. Mus. La Plata, ii, 1893, p. 6 : Montevideo, Ur.

*Incertae sedis.*

31. *apiatus* (*Batrachus*) Cuvier & Valenciennes, *ibid.*, p. 477 : Cape Seas.  
32. *biaculeatus* (*Batrachus*) Steindachner, Verh. zool.-bot. Ges. Wien, 1867, p. 516 : Cape of Good Hope.  
33. *cirrhusus* (*Batrachus*) Klunzinger, Verh. zool.-bot. Ges. Wien, 1871, p. 500 : Red Sea.  
34. *elminensis* (*Batrachus*) Bleeker Soc. Holl. Sci. Harlem, 1864, p. 98 : Guinea Coast.  
35. *gronovii* (*Batrachus*) Cuvier & Valenciennes, *ibid.*, p. 482 : Brazil.  
36. *güntheri* (*Batrachus*) Bleeker, *ibid.*  
37. *marmoratus* (*Batrachus*) Steindachner, *ibid.*, 1866, p. 482 : ?
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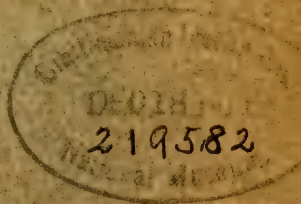


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**EDITED BY THE DIRECTOR**  
**R. HAMLYN-HARRIS, D.Sc., F.R.M.S., F.Z.S., F.E.S.**





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OF THE

# QUEENSLAND MUSEUM

No. 10.

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Edited by the Director

R. Hamlyn-Harris, D. Sc., F.R.M.S., F.Z.S., F.E.S.

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**Editor :—R. HAMLYN-HARRIS, D.Sc., F.R.M.S., F.Z.S., F.E.S. &c.,  
DIRECTOR.**





## ON SOME MESOZOIC FOSSILS.

By C. W. De VIS, M.A.

PROMINENT in an interesting collection of fossils made and liberally presented to the Museum by F. L. Berney, Esq., R.A.O.U., of Wyangaria, I find more than one of so much promise that I am tempted to accept from them, as intermediary, whatever information they have to impart to the branch of science whose concern they are. I cannot persuade myself to pass on without venturing to pledge to Mr. Berney thanks other than "mine own" for his painstaking appreciation of the value to knowledge of relics of past life, an intelligent appreciation unhappily too exceptional. Would that more than the very few among the dwellers in our wilds at present known would help us onwards by utilizing to similar good purpose similar opportunities! Wyangaria is a station in the neighbourhood of Richmond and Hughenden, approximately in lat. 121, long. 143, more precisely on O'Connell Creek, one of the headwaters of the northward flowing Flinders River.

There is presumptive evidence of the age of the fossils in question, in the fact of their occurrence on an area of that formation which has been traced so far and wide over the surface of Northern Queensland, the Rolling Downs or Lower Cretaceous, conclusive testimony from the familiar fauna associated with them—*e.g.*, *Ichthyosaurus australis*, *Belemnites canhami*, *Aurella hughendensis*. Of the exact stratigraphical position of the beds containing them, I am uninformed. From the almost entire absence of fracture surfaces upon them, and the bold relief of their enclosed organisms, it seems allowable to suppose that they have been weathered out of beds which possibly have disappeared. The rock is a rather thin-bedded, highly calcareous marlite, disintegrated with brisk action by hydrochloric acid, and leaving, after solution of its lime, a copious residue of ferruginous alumina. Internally it is fine-grained, hard, very tough, and darkly coloured by iron oxide; superficially it has, by partial loss of constituents, been rendered

softer, more flaky under the chisel, and, by hydration of the iron salt, impure yellow in colour.

Regretting that I am unable to give a more satisfactory account of the environment of the fossils at burial, I proceed to submit them to notice individually. The first, in the form of a Cycad, will, perhaps, appeal more especially to the interest of the palæobotanist.

### CYCADAIEÆ.

Across the surface of one of the slabs lies the inorganic cast of a section of an apparently cycadaceous stem, 7 inches (177mm.) in length, and in breadth varying from 3 inches (76 mm.) at the base to  $1\frac{1}{2}$  inch (38 mm.) at the apex. The stem is flattened, so greatly, indeed, that its basal section has the form of an elongated triangle, with its very obtuse angle replaced by a deep excavation, the termination of a tubular cavity in the heart of the stem. The lower half of the medullary cavity is empty, or nearly so; its upper moiety is still occupied by its converted medullary tissue distinguished by its colour from the adjacent ligneous and cortical layers, which, in their present denuded condition, of course, present no surface whereon foliation cicatrices could be preserved. Accompanying the stem there is not a trace of organic matter visible, unless it be, as be it may, that a black substance scattered over the slab, and distantly simulating dendritic manganese, represents the carbonaceous remains of decayed foliage. It is possible that this seeming fossil stands in peril of being condemned out of the category of extinct plants, on the ground that it is but a pipe in the rock filled up with sediment. I believe that cases of the kind have occurred. But what if it could be shown in the present one that Cycads were either growing or deposited on the same spot at the same time? Would not the recognition of the organic origin of this "stem" be then justifiable? As this evidence of the correctness of the view taken of it here is merely concealed by  $1\frac{1}{2}$  inch of sediment, we have but to turn the slab over to find it in the form of a plant of well-known but, under the circumstances, an unexpected genus.

#### PTEROPHYLLUM MUCRONATUM, n.s.

Pl. ii, figs. 1 and 2.

The survival of the long-lived and prolific genus *Pterophyllum* to Cretaceous times is attested by the generic characters of part of

a frond bearing strap-shaped pinnules which, set at right angles to the rachis, are decurrent, separate, alternate, attached to the rachis by the whole base, and have veins parallel to each other and to the margins of the pinnules; furthermore by its appearance among Mesozoic fossils.

*Spec. Char.*—Pinnules long, four times as long as broad, apices mucronate by truncation in an upwardly curved direction, pointed; bases slightly contracted; veins 10 to 12 in number; rachis narrow, not striated, the part in sight not attenuated.

The veining is preserved on the bases of several of the lower pinnules, but in a condition which renders it somewhat difficult to ascertain their number precisely. I cannot, however, count more than twelve.

It is generally understood that the *Pterophylla* became extinct in the Jurassic period. The only hint to the contrary that I can find in literature available to me is the *P. ernestina*, Stiehl, and the right to a place in the genus claimed for this plant is, according to Schimper, dubious. The rock on which the pinna is displayed is in all respects identical with the matrix of the fossils accompanying it. If the foliage and the stem belong to the same species, as indeed seems more than probable, this Cretaceous *Pterophyllum* fails to show that the genus was even then represented by a decadent species.

The righteous protest uttered by Professor Forbes, in his Presidential Address to the Geological Society in 1854, against "rolling in the catalogue of new types morsels" of plants should be borne in mind whenever the temptation to do so is felt. But in the present instance the identity of the genus is so obvious, the specific novelty rendered so probable by the extreme rarity, if not absolute want, of previous discovery of *Pterophyllum* in the Cretaceous flora, that I feel justified in proposing for the plant a distinctive name.

#### NOTOCHELONE COSTATA, Owen.

Pl. iii, fig 1; Pl. iv.

Thirty years have nearly elapsed since Sir Richard (then Mr.) Owen described, under the name *Notochelys*\* *costata*, part of the carapace and plastron of an extinct Australian Chelonian. Since the date of that description, 1882, nothing more, so far as I am

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\* Subsequently changed to *Notochclone* by Mr. Lyddeker.



aware, has been made known respecting this reptile. It is therefore with great pleasure that I find myself in a position to make some little addition to our knowledge of its structure, provided always that co-identity between the type and its supposed co-types can be established. The type was said to be from the Flinders River, but the result of subsequent inquiry was the information that it had been sent to Sydney from Landsborough Creek, one of the primary affluents of the Thomson River, whose southerly directed water-course joins that of the Barcoo River, and with it loses itself further south. The watersheds of the two rivers, inclining in opposite directions, are separated by so scanty a breadth of upland—if barely rising ground may be so called—that the distance of Landsborough Creek from O'Connell Creek is but little more than 80 miles, a space of old sea margin too small to compel us to believe that the remains of a Chelonian found on the one are not likely to belong to the same species as those discovered on the other. On the contrary, it is, in the absence of hostile evidence, allowable to assume that any parts of a like reptile brought to light at O'Connell Creek are, by virtue of their proximity of location, specifically identical with *N. costata*, Ow., and on this understanding treat the two specimens illustrating its cranial features in youth and maturity.

THE IMMATURE SKULL: Pl. iii, fig. 1.—This is an imperfect cranium which, chiefly on account of its comparatively small size, appears to be that of a young individual. It presents to view nothing more than the exterior of the right side of a skull, extending from the anterior end of the maxillary to within the anterior slope of the tympanic antrum. Fortunate in its entombment, it has not been subjected to a depressing force acting on its roof, consequently whatever features it has wherewith to instruct us, these have remained vertically in their normal form. The temporal region is protected by bone, presumed by a post-frontal 14 mm. in breadth. The orbit is not at this period of life of greater size than in the adult, being in length 45 mm., in height 20 mm.; its form would be represented by two parabolic lines, the lower one reversed and inversed. The sclerotic plates are in place, forming a rosette of six plates of unequal size. The most interesting feature in this subject, however, is the armature of the jaw, consisting of four stout compressedly conical and backwardly curved processes half an inch in length from the edge of the maxillary, with indications of a fifth anteriorly.

These pseudodonts, sheathed with horn, must have efficiently served a predatory tortoise in the capture of struggling victims. All traces of sutures have been lost from the surface of the specimen; nothing therefore can be ascertained of the interrelations of the bones posterior to the post-frontal. Its reverse is largely covered with broken bone, which probably formed part of the left side of the skull, but from these nothing is to be learned.

THE ADULT: Plate iv.—The rather sparse information supplied by the younger cranium we may perhaps find supplemented to a noteworthy extent by those characters of the adult which have been demonstrated by atmospheric and manual operations. When it came into my hands, weathering had already exposed the upper surface from the premaxillaries inclusive to the end, approximately, of the super-occipital spine; the parts thus made visible were the rostrum for the most part, the facial and anterior lateral regions, and the parietals as far back as the margins of the parietal vacuities appeared above the matrix. On the lower surface of the slab the contour of the lower jaw could be discerned through a thick coating of sediment. Development proved to be a tedious business owing to the toughness of the rock, an anxious one owing to the readiness of the soft bone to chip off in company with the firmly adhering matrix. It was interrupted by the slab proving itself unable to withstand continuous concussion by gradually falling apart in spite of clamping, and not resumed lest damage should be done to the exterior of the skull. The additional structures exposed are the post-frontal surface, the lower surface of the beak, the line of junction of the closed jaws, the tympanic antrum partially, the orbit partially, the mandible, and the palate sufficiently to show the position of the choanæ. In form the skull approaches to that of an isosceles triangle, whose longer sides are somewhat, but distinctly, contracted at a point situated rather less than half their length from the apex—in other words, the convexity of the snout, continuous with that of the rest of the skull, so commonly seen in marine turtles, is here absent. The size of the fossil is a matter of some interest in relation to the type of the genus. Its dimensions are:—Total length to the apparent end of the spine, not less than 195 mm.; greatest breadth across the parietals, 112 mm.; interorbital breadth, 60 mm. I perforce assume the correctness of Owen's estimate of the original length of his carapace, about 505 mm., and

venture to assume that the average of the proportion of skull to carapace in Chelonians may be found in recent turtles—for example, in *Chelone virgata*. In these I find them to be 1:4.7. Since the length of the *Notochelone* skull is at least 195 mm., it is thus proportionate to a carapace about 916 mm. long. Either then *Notochelone* had an enormously disproportionate head, or the type was not much more than half grown. For myself, I should prefer the latter alternative. It seems not improbable that the carapace and the younger of the skulls were of about the same age.

We have to thank an accident, resulting from superincumbent pressure, for an assurance of the existence of one important piece of internal structure, the fact of whose presence would have remained merely inferential. Resting on its mandible and, judging from the unequal level of that bone, with an inclination to the left side, the skull has yielded to the force applied to it from above. Anteriorly, as far back as the posterior limit of the frontal, it has been crushed down considerably below the level of the parietals. The parietals themselves, that of the left side especially, have within a short distance from the sagittal suture been split longitudinally, and bent downwards, but have escaped depression along a narrow space on each side of the mid line. This space was evidently upheld by the vertical walls formed by parieto-pterygoid plates. The lateral extent of the premaxillaries cannot, in the absence of sutures, be defined and, to my regret, their palatal relations have not been laid open. The rostrum is prolonged to a distance of 35 mm. from the anterior nares, and its terminal margin is but slightly, if at all, unciform. The edge of the maxillary is uniformly simple without a trace of processes dentiform or other in the part uncovered, though in uncovering it the greatest care was taken to avoid obliterating them had they been present. It would seem that we have here a case analogous to those noticed by Mr. Boulenger when wisely suggesting that the loss of the sharp-edged mandibles present in certain Chelonians when young, and their substitution by molariform alveoli in the adults may be accounted for by supposing it to be the result of a change from a carnivorous to a conchivorous diet. In the present case I am induced to submit that, if the absence of dentiform processes in the adult should be confirmed by subsequent acquaintance with *Notochelone*, it resulted, not from a change of diet but from an increase in muscular power. Objects of prey so elusive

as to be held securely only by the teeth of the comparatively feeble young or so large as to need piecemeal severance by them, would struggle in vain against the firmer grip of the adult jaw or be swallowed intact.

The anterior nares are flanked by an ascending process from the maxillaries and roofed over anteriorly by a pair of nasals. The nasals are short, 5 mm. fore and aft, with a transverse breadth of 27 mm. ; close to the orbit a tongue from them bends down to meet the maxillary process in a horizontal suture ; the prefrontals, 11 mm. long on their common suture and 26 mm. on the margin of the orbit, more than half of which they constitute, send down from their anterior angles a process which cuts off that from the nasals from the canthus orbitalis, and shares with it its junction with the maxillary ; the fronto-parietal suture was effaced by the down-thrust of the bone anterior to it, it has an approximate length of 15 mm. ; laterally it forms, as usual, the posterior margin of the orbit ; the deformed orbit is an elongate oval, 46 mm. in length, its vertical diameter reduced by pressure is 19 mm. ; sclerotic plates have so far not been divulged by removal of matrix to some depth ; the tympanic cavity, distorted and on its posterior margin somewhat obscure, appears to have been continuously surrounded by bone, no sign of an interruption in it is perceptible ; its present shape is that of an oval, 33 mm. long and 20 high, drawn out to a point on the upper part of its posterior end. In this skull also conditions do not favour the discrimination of the remaining cranial elements. The surface of the bone in both skulls is rather densely pitted, smooth, unimpressed by tegumentary scutes, unrelieved by reticulating ridgelets save that on one of the parietals of the adult there faintly appears a small patch of them.

*Mandible.*—The mandible in articular connection with the quadrates is apparently a member of considerable strength, 107 mm. in length, in span posteriorly 49 mm. While development between the rami was in progress the terminal part of the hinder end of the right one, though distant, became dislodged in so fortunate a manner that the form both of its own articular surface and that of the quadrate became ascertainable ; the former is, after adding to it a little left by it on the quadrate, seen to be convex, the latter concave. The end of the left ramus was found to have been broken into before burial with the result, long deferred, that the relics of



the inlet of the mandibular canal have been laid open to inspection. Occupying a place amongst them there is, strange to say if my interpretation of it be correct, a funicular body 3 mm. in diameter which can hardly be anything else than the common sheath of the dental nerve and its accompanying vessels filled with sediment. Into the canal itself no sediment has found access. In soft tissue, areolar or fibrous, when immersed in mud, prolonged immunity from decomposition or from destruction by living agents seems incredible. Recourse can be had to two conclusions only: the skull was buried immediately after death or mineralization was, under peculiar conditions, effected so rapidly that the foramen was closed against the ingress of sediment into the jaw itself. The symphysial end of the bone is to all appearance greatly overhung by the upper jaw, but to an extent which might possibly be diminished by a complete removal of the matrix in front of it, in which case the length of the unsutured symphysis would be seen to be more than the 34 mm. now visible. The choanæ are situated between the tympanic cavities.

**HIND LIMB: Femur.**—The femur is instructively displayed on the upper edge of the fragment containing the younger skull. Its head indeed is buried in the rock, and unfortunately the space between the sides of the skull is too narrow to permit continuance of endeavour to bring it to light. It is, in fact, not quite certain that it remains to be found. The parts visible are the trochanters, the semi-circumference of the shaft, and, to a greater height above the matrix, the distal extremity. The great trochanter, of which the extent is easily traceable though the summit was found to be missing, was very much higher than the lesser and connected with it by a ridge crossing the valley between them. The shaft is cylindrical; as it descends from the trochanters it diminishes rather rapidly in breadth as far as the middle of its length, then increases and curves outwardly till it is lost in the articular dilatation. This is as usual thick, convex, without special areas of adaptation to the tibia and fibula. On the fibular side a portion of the bone is absent, but the entire edge of the fracture is visible. The dimensions of this bone will more conveniently be stated in conjunction with those of the segment following.

**Tibia.**—The distal long bones, half concealed, lie beside the adult skull, this and the long striated triangular depression on their ends, indicative of reptilian origin, are circumstances suggesting the

high probability that time was when the brain within the skull actuated these bones without it. The straight and rather slender tibia has the cylindricity of its shaft only marred by a very moderate flattening over the middle of its diameter and expands gently from about its mid length towards each terminal limit. Its articulating borders have the customary incrassation, convexity in both directions, and want of surfaces differentiated for articular requirements.

*Fibula*.—The fibular moiety of the segment is of still greater interest. It is considerably longer than the tibia, slightly broader at its proximal, nearly as broad at its distal end, and rather thicker in the shaft, which has so strong a curvature that the interosseous space equals its own remarkable diameter. The superior size of this bone is not without significance; its muscular investment must have been capable of communicating an unusually powerful outward sweep to a natatory foot.

The proportions, *inter se*, of these bones in their several dimensions may possibly tend to influence opinion respecting the zoological standing of *Notochelone*, and are therefore worthy of consideration. They may be most succinctly expressed in the tabular form subjoined:—

| —  |     |     |     |     |     | NOTOCHELONE.           |                     |
|--|-----|-----|-----|-----|-----|------------------------|---------------------|
| <i>Femur.</i>                            |     |     |     |     |     | Measurements<br>in mm. | Ratio to<br>Length. |
| Length (from summit of great trochanter) | ... | ... | ... | ... | ... | 70                     | ...                 |
| Minimum diameter                         | ... | ... | ... | ... | ... | 8½                     | 1·8                 |
| Trochanterian width                      | ... | ... | ... | ... | ... | 23½                    | 1·3                 |
| Distal width                             | ... | ... | ... | ... | ... | 22                     | 1·3                 |
| <i>Tibia.</i>                            |     |     |     |     |     |                        |                     |
| Length                                   | ... | ... | ... | ... | ... | 72                     | ...                 |
| Min. diam.                               | ... | ... | ... | ... | ... | 9½                     | 1·8                 |
| Proximal width                           | ... | ... | ... | ... | ... | 18                     | 1·4                 |
| Distal width                             | ... | ... | ... | ... | ... | 12                     | 1·6                 |
| <i>Fibula.</i>                           |     |     |     |     |     |                        |                     |
| Length                                   | ... | ... | ... | ... | ... | 81½                    | ...                 |
| Min. diam.                               | ... | ... | ... | ... | ... | 10                     | 1·8                 |
| Proximal width                           | ... | ... | ... | ... | ... | 18                     | 1·4                 |
| Distal width                             | ... | ... | ... | ... | ... | 12½                    | 1·6·5               |

On the removal of matrix overlying the area immediately behind the distal ends of the long bones there appeared an osseous mass, denuded of its outer structure before burial, defined as to its horizontal limits by the exposed edges of that structure and without

similar indications of external surface dividing it fore and aft. Its anterior border lies in approximation to the ends of the tibia and fibula, and is scalloped opposite to their articulating surfaces; on the fibular side it extends outwards and slightly forward for the space of 5 millimetres. The posterior or distal edge describes while in a line with the leg bones a curve, which, commencing at the inner end of the anterior edge, is interrupted only by an emargination opposite the interosseous space; passing outwards it turns suddenly forwards and, with a procurved course, joins the anterior edge at an acute angle.\* There does not appear to be any room for doubt that we have here a massive coalesced astragalo-naviculare.

The apparent preservation of soft tissue within the mandible naturally tends to confirm a suspicion already entertained that sundry patches of a thin dark-coloured substance lying flat on both sides of the slab may be remains of integument; two of them appear on the obverse, three on the reverse, the largest an irregular rectangle. All but one present a perfectly smooth exterior which may be supposed to be that of the outer aspect of the derm. The fifth, which apparently lies with its inferior surface upwards, is densely beset with minute papilliform tubercles, possibly dislodged from the pores opening on the surface of the bone. From the presence of these fragments it may perhaps be gathered that the head of the *Notochelone* was covered with smooth skin which, as we have seen, left on the bone beneath it no sign of its former existence.

A satisfactory discussion of the relations of *Notochelone* with the existing types of its order is simply impossible where the necessary literary help is not available in matters of research. In such circumstances one must be content with describing faithfully and as lucidly as one may whatever characters the subjects have appeared to possess and to leave to others better equipped to put them to a higher use. But it is almost equally difficult to leave a close examination of these relics without having acquired a general perception of their zoological standing, and even that may be worth stating.

The conclusion from which we can hardly escape is that this reptile is one of those generalized forms which set to the systematic zoologist so many problems difficult of solution, forms which cannot be without violence introduced into any extant family as constituted.

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\* Not indicated in the drawing.

It is as it were a panorama from which scenes and personages have been omitted and changed in the course of successive reproductions so that it has become impossible to say that any one of the latest of them is the lineal descendant of the original.

#### A FISH.

To other fishes from the Rolling Downs very imperfectly made known by the nature of their remains may be added an *Acanthopterygian* of considerable size, collected by Mr. Berney. The mere existence of this addition to our Cretaceous fish fauna is all that can be gathered from the four abdominal vertebræ which represent it, and as it is in much the same predicament as the *Chirocentridan* fish dismissed nameless by Dr. Woodward (*Ann. Mag. N.H.* 6 xiv p. 447) it may share the same fate. The neurapophyses and their spines are in their place and the ends of ribs from preceding vertebræ rest on the sides of those preserved. The four centra, which present no significant character superficially, are together 76 mm. in length; the anterior one is perforated centrally, in the posterior one the fact of its perforation is obscure; their diameters are at the anterior 42 mm., posterior 45 mm.

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## ANNELID TRAILS.

By C. W. De VIS, M.A.

Pl. iii, fig. 2.

SIGNS of the passage across sand or mud of animals low in the scale of organization are, it is well known, of frequent occurrence wherever the older rocks have been sedulously explored. It might naturally have been expected that similar rocks in Queensland would have supplied examples of such "footprints on the sands of time," but I am not aware that in them instances of the kind have hitherto been made known. If only on this account some trails discovered and recognised as such by Mr. Berney may have to the geological mind a certain amount of interest, an amount which will certainly not be lessened by the excellent state of preservation retained by them during so many ages.

They present themselves for examination (happily unapprehensive of the modern ordeal) in two forms on a few square inches of indurated mud, itself coming before us in "questionable shape"—seeing that there is a consensus of opinion that among the multifarious traces of animal life, that have been attributed to the movements of the tubercular bristle feet of Annelids, some, like the present, are doubtless to be credited to that agency, the origin of those under notice may be taken for granted. Of one of them, indeed, a *Nereites*, the generic identity is beyond doubt, and, under the circumstances, I have no hesitation in naming it, in compliment to its discoverer, *Nereites Berneyi*. This trail, the longer of two, consists of the usual double row of markings, the more perfect of them presenting in this case a raised semi-oval buckle-shaped border, enclosing a shallow impression with a minute elevation in the centre. The markings are 2.5 mm. long, set alternately at an angle of 45 degrees to the axis of the trail, which has no median groove; four of them occupy the space of one centimetre, and the double row is 6 mm. broad.

GENUS.—The shorter trail was moulded by a genus unknown to me. It also consists of a double row, but one of close-set

ridgelets, 2 mm. long, raised at an angle of 40 deg. to the mid line, which is marked by a very slender ridge. In this 10 ridgelets cover a centimetre; the double row is 4.5 mm. wide.

The morsel of shale bearing these trails, though much less than half an inch (9.5 mm.) in thickness, is an accumulation of eight distinct strata, whose edges, appearing on a shelving portion of its upper surface, are there manifested by sinuous lines crossing it, and defining the successively diminishing extents of accretion. Over the whole of the outcrops, and over nearly the whole of the upper surface of the slab, can be traced the path of the worm, but not with uniform ease. Until it reaches the edge of the newest layer it is but an impression obscure in its details, and uninformative were it not a guide to the interpretation of trails in a similar condition elsewhere. On the upper surface the terminal third or thereabout of the trail is in a like state of imperfection. The intermediate and characteristic portion was evidently made over mud which was at the moment more ductile under the worm's motile organs. So was it also in the case of the shorter trail, which ensued immediately on the emergence of a worm from mud capable of rising in proof of the fact of a passage across it, for it may be well to point out that the present trails are not casts made by the lower surface of a superincumbent bed, but disturbances of mud actually traversed.

The laminated shale, which in thus recording events in ancient history enormously antedates the clay tablets inscribed by Babylonian hands, is more communicative than its artificial relatives, inasmuch as it informs us of some at least of the conditions under which itself was brought into existence and its story written. The data it hands down point to a muddy shore, on bay, estuary, or wherever else tides ebb and flow under a calm and clear sky. A mud flat, so called, is far from being on a dead level throughout; it has its swellings and its sinkings, and in its hollows, as in rock basins, water is apt to be left by every retreating tide. On one of these ancient shores neap tides brought each its burden of finely levigated silt, and deposited it seaward of that left by the preceding flow. At intervals between tides the water in the depressions of the surface dried up more or less in the heat of the day, and here and there the surface hardened or remained soft as circumstances ruled; worms issued from beneath the watery parts and trailed across the sediment

the trails were laid dry, and indurated sufficiently to enable them to withstand the gentle impact of the next mud-charged tide, which covered them up and hid them away till they were revealed to our senses. If the tale told by this bit of erstwhile mud should appear true to nature, that other truth that the selfsame agents, physical and organic, which do their part in regulating the world we know were actively at work in the incalculable past, will have received one more illustration.

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# PALÆOLESTES GOREI, n.s.

## AN EXTINCT BIRD.

By C. W. De VIS, M.A.

Pl. ii, figs. 4-6.

WHILE engaged in watching the progress of workmen employed in sinking a well at Yandilla, Mr. Gore, the owner of the station, and one of the few who are alive to the interest felt by many besides themselves in the fossils of the Darling Downs, took unusual pains to assure himself that not one present in the beds disturbed should escape his notice. His reward could hardly have been greater in numerical meagreness. His sole find was a single small bone, the subject of the following memorandum. Naturally curious to learn what it was that gave him so much trouble to procure, Mr. Gore brought it to the Museum for examination, and eventually was good enough to leave it there.

The bone occurred in clay at a depth of 40 feet. It has the colour and state of mineralization familiar to handlers of fossil exuviae from the Darling Downs; of its contemporaneity with them there is consequently not the shadow of a doubt.

A glance at its facies is sufficient to assure one that it is a phalanx from the foot of a bird. Apart from size and proportions there is a pervading similitude amongst the greater number of the toe-joints of birds which stamps them individually as avian. But at the same time this likeness is apt to render them unsatisfactory guides when we wish to ascertain precisely the particular group to which any one of them belongs. Nevertheless, an endeavour to follow the track of this phalanx may not be altogether to be deprecated. The bones of birds are of the rarest, and it is surely better to see through a glass darkly than to shut our eyes because we cannot see all we would.

DESCRIPTION.—The phalanx is a stout bone of moderate length (18·5 mm.), with a maximum breadth (9·5 mm.) rather more than



half its length. Placed in the attitude proper to it with its dorsum in view (Pl. iii, fig. 6), the contraction of its distal end is in striking contrast with its expansion at its opposite end, a contrast duplicated by the sharp relief of its distal features. The trochlear groove is here deeply incised, and its convex sides rise into ridges which, continuing beyond the groove, converge and meet together on the mid point of the dorsum. Between the ridges and immediately proximal of the articulating convexities the surface for the insertion of the dorsal ligament is sunken, roughened, and pitted. The left side of the bone, as it lies, is broader than the right one; it begins to expand gently from its distal end to about the middle of its length, then rapidly until it approaches the proximal border to join which it suddenly contracts. On the right side it begins to dilate about the middle of its length, whence it extends widely outwards to reach the proximal border, which on that side is tumid. The proximal trochlear excavation (Pl. iii, fig. 4) is on its upper edge almost semicircular; its surface trends downwards, inwards, and laterally from the right to the left side, and reaching the plantar surface encroaches upon it to the extent of one-fourth of its length; below the upper edge and following its transverse curve is the surface specialised for adaptation to that of a preceding bone, a smooth uninterrupted band dilated and curled upwards at its right extremity, less broad and directed inferolaterally at its left. Within the curve of this surface is a large and deep pit whose surface shows that it was the seat of ligamentous insertion. The plantar surface (Pl. iii, fig. 5) is simply a broad and deep trough formed by the rise from it of a ridge on each side.

A bone of this description must necessarily be a basal phalanx, and it is almost needless to add the basal phalanx of a first toe. Its bilateral dilatation, narrow transverse articulating facette, inferior ligament, and provision for the defence of a powerful flexor tendon, are a concurrence of characters which leads to no other than the latter conclusion.

The inevitable inquiry, To what bird did it belong? cannot be so readily answered. After elimination of the families of birds which have either no hind toe or one in a rudimentary condition, or are so elongate and slender as to bring its toe joints entirely out of parallel with the fossil, there followed a strict comparison of the

latter with all the remaining Australian families. It is not proposed to recapitulate the differential features observed in the subjects of these comparisons; this is a procedure less calculated to increase knowledge than to display it. The results of the inquiry were that no recent bird could supply a replica of the fossil phalanx, and that the nearest approach to it was to be found among the Accipitres, to what family of the Birds of Prey is altogether uncertain. If this phalanx should prove to belong to an extant bird which has become extinct in Australia, the proposal now made to let it bear the name of *Palæolestes gorei* may be excused since foreign materials of research of the kind are but scantily at the service of the writer.

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## CESTRACIONTIDÆ.

By C. W. De VIS, M.A.

A SMALL tricuspidate tooth (plate ii, fig. 3), observed by Mr. Berney on the weathered edge of a mass of molluscan remains, affords the following means of discrimination:—Median cusp broad and low, its height about equal to its breadth at the base, edges convex, point obtuse, base cleft, a channel ascending from cleft merging into an impressed area which occupies much of the surface of the crown, crown smooth (except for the angular edges of the impression), and towards the base tumid on each side of the impression; right lateral cusp high, nearly as high as the median, narrow, subulate; left lateral cusp small, smooth, similar to the median in form; left limb of root prolonged, right possibly so.

These characters approach so nearly to those of the prehensile teeth of certain species of *Hybodus* that one need have little hesitation in concluding that the tooth under view represents a member of that genus. Whence it appears that our Port Jackson shark was not without an ancestor in our cretaceous sea. To this tooth may be allotted the name *Hybodus incussidens*.

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# A WILD DOG FROM BRITISH NEW GUINEA.

By C. W. De VIS, M.A.

THE drawing (plate i.) represents, approximately, an example of the dog made known to us by His Excellency Sir William MacGregor, while Lieutenant-Governor of British New Guinea, in his Annual Report for the year 1897-8, p. 27. On 26th October, 1897, His Excellency was on Mount Scratchley, at an elevation of 7,000 feet. He remarks that "Animals are rare," and, summarising the mammalian fauna observable, includes "wild dog" in the list. We may safely infer that in that locality the dog is rare. Whether it is so or has ever been observed in other localities I do not know, but have reason to think that it has not. The mounted skin, which allowed the artist to form a more or less true conception of the living animal, had long been macerating in alcohol, and was entirely boneless; naturally it baffled the utmost cunning of our late taxidermist in his effort to endow it with a semblance of life. Fortunately it was accompanied by the skeleton, which had been removed from it, and from the two we are able to see pretty clearly what were the form and proportions, clothing and colour, of the dog in its living state.

Its size is that of one of the smaller breeds of our domestic dogs; the body deep and long, measuring over head from tip of nose to root of tail  $25\frac{1}{2}$  inches (650 mm.), the legs strong and short, the height at the shoulder being but  $11\frac{1}{2}$  inches (290 mm.), the leg itself 7 inches (173 mm.); a comparatively small head with a narrow and deep muzzle is borne on a short thick neck; the eyes moderate in size, are slightly oblique; the ears rather short, erect; the tail reaching to the middle of the lower leg; the mammae 10 (2 pectoral, 8 inguinal); dew claw none. The hair on the body is short and closely adpressed, without under-fur; on the neck it is longer, forming a ruff between the shoulder and ear; on the tail the hairs are long and towards the end rather bushy. Colour, black and white, the black predominant; the white portions are a long



irregular patch on the nape, another covering the chin, throat, and breast, and contracting to a point on the abdomen; the paws, left tarsus, and tip of tail are white also; the inguinal region tawny white. There is much about this animal compelling one to believe that though truly called a "wild dog" it is not a "truly wild dog"; in other words, that there was a time when its forbears were not wild. A small head on a bulky body, both mounted on short legs, together with a coat of contrasted colours, are features which are certainly not the rule among indigenous members of the family Canidæ. But if we decide that this dog is merely feral, of a domestic breed run wild, as dogs are apt to do, how are we to account for its habitat on Mount Scratchley? So far as I am aware, the present natives of the island possess no tame breed of dog similar to this—none, therefore, from which this could have departed. If this be so, it is only reasonable to conclude that New Guinea has been peopled by a pre-existing race, and one sufficiently advanced to cultivate varieties among its canine companions and hybridise them. We already have sufficient proofs, in relics now venerated as fetishes, that such a race once existed—a race who manufactured pottery of a grade superior to that now achieved by existing Papuan art, and elegantly fashioned mullers for grinding seeds, putting to shame the water-worn stones that content the present folk. What grand changes, geological, climatological, zoological, botanical, New Guinea and Australia have experienced since the muller that sank into the old river-bed in Woodlark Island was new from the hands of its maker!

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## DESCRIPTION OF SNAKES APPARENTLY NEW.

By C. W. De VIS, M.A.

It is impossible to diagnose these species of snakes and neglect to pay a large tribute of gratitude to their discoverer, a friend who, fortunately for us, inherits from his father his love of and aptness for scientific investigation—Dr. T. L. Bancroft. Induced by a sense of the value of research into the nature and action on the human system of snake venom, with the view of discovering remedial agents, Dr. Bancroft has been led to do good service to this cause among others, both by his own studies and by supplying other experts with the venom of our Australian snakes. Happily for both purposes, Stannary Hills, the district in which he has lately been sojourning, and other localities, have rendered up to his energetic inquiries previously unknown forms of venomous snake life. It is good for us to have all the knowledge possible of that life, and no disinterested effort for the good of mankind should be allowed to pass without receiving tokens of respect.

### **TROPHIDECHIS DUNENSIS, n.s.**

Muzzle short and obtuse. Eye twice as long as its distance from the mouth, as long as its distance from the nostril; rostral much broader than long; its portion visible from above, shorter than the internasals; prefrontals and internasals about equal in length; frontal tumid on the sides, one-fifth longer than broad, as long as the parietals, more than twice as broad as the supraoculars, deeply sulcated mesially, the sulcus broad in front, narrow posteriorly; nasal tumid, semidivided by a suture on its lower margin, in contact with the anterior ocular; supraorbital narrow, forming with the prefrontals a rather distinct canthus rostralis; oculars 1-1, the anterior sunken, the posterior large (probably fused with an upper temporal); temporal single, wedged in between the fifth and sixth upper labials; upper labials seven, third and fourth entering the orbit; two pairs of chin shields between the incurved first lower

labial, the anterior greatly enlarged, twice as large as the posterior, in contact with three lower labials. Scales in 21 rows, all carinated; ventrals 216, subcaudals 52; anal entire. Rather pale rufous brown; upper edge of rostral, hinder edge of prefrontals, two spots in the sulcus of the frontal, an inverted V-shaped bar from posterior angle of frontal to the last upper labial on each side, a bar from the side of the frontal to the penultimate upper labial, bars edging the other upper labials, a vertebral line beginning in lanceolate form within the  $\Delta$  and partially broken up into lenticular blotches, and 62 irregular shaped vertical bars with white edges on the sides, all these markings black; beneath white, the ventrals with more or less broad dark edges and two rows of quadrangular dark spots on their sides. Total length 360 mm.; tail 48 mm.

Loc.: Darro, Darling Downs.

Presented by Dr. T. L. Bancroft.

### DENISONIA REVELATA, n.s.

Eye moderately large, its least diameter greater than its distance from the mouth; pupil broadly elliptical, erect; rostral broader than long, its posterior edges quadrilateral, its upper surface visible from above, and nearly as long as the internasals; internasals two-thirds as long as the prefrontals; frontals rather more than half as long again as broad, its suture with the prefrontals a straight line—twice as broad as the supraoculars, longer than its distance from the end of the snout; nasal entire in contact with the preocular, orifice in an oblique groove; oculars 1-2; temporals 1-2; the lower posterior small, with its lower angle inserted between the fifth and sixth upper labials; upper labials six, the third and fourth entering the orbital ring; three lower labials in contact with the anterior chin shield, which is as long as the posterior. Scales round the body in 19 rows; anal entire; ventrals 206, distinctly angulated and faintly emarginate above the angle; subcaudals 50, in one row. Tail one-seventh of the total length.

Body uniform blackish brown above, smoky brown beneath; nape and spots on lips and temporals white; head above pale brown; rostral, nasal, and hinder half of prefrontals black; a black blotch on the supraorbital adjacent to the frontal, continuous with another expanding on the middle of the parietals, forms with its fellow two

lines which unite, and sending backwards a short streak on the nape produce a figure like that of a tuning-fork; lips and temporals with black spots; nape broadly edged posteriorly with black.

Loc.: Stannary Hills.

Presented by Dr. T. L. Bancroft.

This snake Dr. Bancroft has found to be rare.

### **DENISONIA ROSTRALIS, n.s.**

Eye about one of its diameters from the mouth; rostral shallow, with a rather sharp edge on its downward and backward curve, its upper surface broader than long and nearly as long as the prefrontals; internasals shorter than the prefrontals; frontal nearly twice as long as broad, more than twice as broad as the supraocular, longer than the parietals and longer than its distance from the end of the snout; nostril in a small trapeziform shield, separated from the preocular by the lateral limb of the prefrontal, which forms a suture with the second labial; oculars 1-2; temporals 2-2, the lower anterior wedged in between the fifth and sixth upper labials; upper labials six, third and fourth entering the orbit, sixth large; three lower labials in touch with the anterior chin-shields, which are longer than the posterior, the latter separated by a pair of lanceolate scales. Scales in 15 rows; ventrals 140, subcaudals 22; anal entire. Above pinky-white; scales, lowest laterals excepted, with black posteriorly lunate edges forming a complete reticulation; snout marbled and vertex spotted with black, rest of head densely reticulated; on the nape a black space extending from the fifth to the fifteenth nuchal scale; beneath white. Total length 332 mm.; tail 35 mm.

Loc.: Stannary Hills.

Presented by Dr. T. L. Bancroft.

### **DENISONIA BANCROFTI, n.s.**

Eye distant about one diameter from mouth; rostral a little broader than deep, barely visible from above, internasals about two-thirds as long as the prefrontals; frontal about one and one-third as long as broad, shorter than its distance from the end of the snout, thrice as broad as the supraoculars, considerably shorter than the parietals; nasal entire, triangular, separating the



rostral from the first labial, widely separated from the preocular by the prefrontal which forms a suture with the second labial; oculars 1-2; temporals 1-2, the anterior wedged in between the fifth and sixth upper labials; upper labials seven, third and fourth entering the orbit, first very small and triangular; three lower labials in touch with the anterior chin-shields, which are larger than the posterior. Scales in 15 rows; ventrals 185, subcaudals 33, anal entire. Above grey; the nine median dorsal scales with black edges broadening laterally and forming longitudinal lines; head and nape black interrupted by a white transverse band occupying the space between the end of the frontal and the fourth nuchal scale; beneath white. Total length 190 mm., tail 40 mm.

Loc.: Stannary Hills.

Presented by Dr. T. L. Bancroft.

#### **PSEUDECHIS MORTONENSIS, n.s.**

Eye distant one and a half diameter from the mouth; rostral one-fourth broader than long, its upper surface two and a half times shorter than its distance from the frontal, as long as the internasals at their longest; suture between the internasals half as long as that between the prefrontals; frontal broader than the supraoculars, as long as its distance from the rostral; posterior nasal in touch with the preocular; oculars 1-2; temporals 2-2 (on one side 2-0), the lower anterior wedged in between the fifth and sixth upper labials; upper labials six, third and fourth entering the orbit; anterior chin-shield wedged in between the first and third lower labials, its apex touching the second; chin-shields equal in length. Scales in 19 rows; ventrals 191, subcaudals 60 (22 single, 38 pairs); anal divided. Above black; beneath dark lead-grey with a bluish tinge; ventrals with narrow black edges anteriorly; subcaudals paler than ventrals. Total length 1035 mm.; tail 20 mm.

Loc.: Brisbane Suburbs.

#### **PSEUDECHIS WILESMITHII, n.s.**

Eye moderately large, equal in diameter to its distance from the mouth, pupil round; rostral one-fourth longer than broad, nearly as broad as the internasals and prefrontal suture together are long, very visible from above, its apex a sharp point wedged between the internasals; internasals half as long as the prefrontals, separated

from the preocular by the prefrontals and nasals; nasal divided, the nostrils in the posterior moiety, which is widely separated from the preocular; frontal a little broader than the supraocular, rather more than one and a-half times as long as broad, its length seven-eighths of its distance from the rostral and equal to that of the parietals; oculars 2-2; \* upper labials seven, third and four entering the orbit; two lower labials in touch with the anterior chin-shield, which is much longer than the posterior. Scales in 23 rows (25 on the neck), the dorsals very narrow, the lower laterals nearly as broad as long; ventrals 233, subcaudals 63 pairs; anal entire, pale brown above becoming paler on the muzzle, which is spotted, and fading on the sides into ivory white on the ventrals; ventrals irregularly tinged and blotched with pale rose-red. Total length 2,215 mm.; tail 340 mm.

Loc.: Walsh River.

Presented by Dr. T. L. Bancroft.

#### **PSEUDELAPS BANCROFTI, n.s.**

Eye much longer than its distance from the mouth, pupil vertically subelliptic; rostral as long as broad, its upper surface as long as its distance from the frontal; internasals two-thirds of the length of the prefrontals; frontal less than half as long again as it is broad, longer than its distance from the end of the snout, shorter than the parietals; nasal entire, in touch with the preocular; oculars 1-2; temporals 1-2, the lower anterior moderately wedged in between the fifth and sixth upper labials; six upper labials; the third and fourth entering the orbit; three lower labials in touch with the anterior chin-shields, which are much longer than the posterior, the latter separated by a scale. Scales in 17 rows; ventrals 188, subcaudals 59; anal divided. Head and nape to the eleventh scale light brown, edged posteriorly and superiorly by a few jet-black scales; inter-orbital region with an obsolete darker crossband; body and tail above pale greenish brown, on its posterior moiety seven broad blackish cross-bands; beneath yellowish white with quadrangular pink spots, two or more on each ventral, not forming longitudinal rows. Total length 587 mm., tail 100 mm.

Loc.: Stannary Hills.

Presented by Dr. T. L. Bancroft.

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\* Temporal regions damaged in extracting venom gland.

# DESCRIPTION OF THREE NEW BATRACHIANS FROM SOUTHERN QUEENSLAND.

By J. LAMB.

## HELEIOPORUS SUDELLI, sp. nov.

TONGUE large subcircular, slightly nicked and free behind. Vomerine teeth in two groups between the choanæ. Habit stout. Head broader than long, snout rounded, without canthus rostralis; nostril nearer the eye than the tip of the snout; interorbital space narrower than the upper eyelid; tympanum indistinct. Fingers blunt, first and second equal; toes short, blunt, half webbed; subarticular tubercles, especially those of the fingers, well developed; a small tubercle between first and second and second and third fingers, inner metatarsal tubercle long and low, no outer metatarsal tubercle. The hind limb being carried forwards along the body, the tip of the longest toe reaches the eye or just beyond. Upper surface of body and hind limbs minutely tubercular; belly smooth, brownish or olive above, marbled with darker; a dark cross-band between the eyes to the outer edge of the upper eyelid, a light vertebral line and a light blotch on the upper part of the shoulders, upper edge of lower eyelid silvery white.

(Named for Miss J. Sudell, its collector.)

### *Measurements in Millimeters.*

|                              |     |     |     |     |
|------------------------------|-----|-----|-----|-----|
| Length from snout to vent    | ... | ... | ... | 45  |
| Length of head               | ... | ... | ... | 17  |
| Width of head                | ... | ... | ... | 18  |
| Length of snout              | ... | ... | ... | 8   |
| Diameter of eye              | ... | ... | ... | 5.5 |
| Width of interorbital region | ... | ... | ... | 3.3 |
| Length of fore limb          | ... | ... | ... | 30  |
| Length of hind limb          | ... | ... | ... | 46  |

Type in Queensland Museum.

Locality: Warwick.

Differing from *albopunctatus* thus:—Vomerine teeth in two groups; nostril nearer the eye than the tip of the snout; first and second fingers equal, hind limb much shorter; skin not smooth, no conical tubercle, tubercle between first and second and second and third fingers.

### HYLA VINOSA, sp. nov.

Tongue suboval, slightly nicked and free behind. Vomerine teeth strong, in two large contiguous groups between the choanæ. Habit robust. Head as long as broad; snout rounded; the distance between the eye and the nostril slightly longer than that of the former; canthus rostralis distinct; loreal region oblique and linear; interorbital space as broad as the upper eyelid; tympanum very distinct, more than half the diameter of the eye. Fingers free, first and second equal; no distinct rudiment of pollex; toes two-thirds webbed; disks one-third of the diameter of the eye; subarticular tubercles very prominent; two metatarsal tubercles, inner large, outer very small; a distinct fold along the inner edge of the tarsus. The hind limb being carried forwards along the body, the tibio-tarsal articulation reaches far beyond the tip of the snout. Skin smooth, granulate on the belly and under the thighs; a strong curved fold beginning from the posterior angle of the eye; a fold across the chest. Blue-green above, changing to vinous in spirits, a broad blackish band from the eye to behind the axilla, blackish spots on the arms and sides of body; hinder side of thighs blackish, marbled and scribbled with white, some of the spots with a blackish centre.

#### *Measurements in Millimeters.*

|                              |     |     |     |
|------------------------------|-----|-----|-----|
| Length from snout to vent    | ... | ... | 52  |
| Length of head               | ... | ... | 19  |
| Width of head                | ... | ... | 19  |
| Length of snout              | ... | ... | 9.5 |
| Diameter of eye              | ..  | ... | 5   |
| Width of interorbital region | ... | ... | 4   |
| Length of fore limb          | ... | ... | 34  |
| Length of hind limb          | ... | ... | 96  |

Type in Queensland Museum.

Locality: Ithaca Creek, Brisbane.



Differing from *nigrofrenata* thus :—Vomerine teeth in two large contiguous groups between the choanæ. Habit robust. Head as long as broad ; snout rounded, first and second fingers equal, disks larger.

**LIMNODYNASTES MARMORATUS, nov. sp.**

Tongue moderate subcircular, slightly nicked behind. Vomerine teeth in a straight, interrupted series behind, and not extending outwards beyond the choanæ. Head broader than long, snout rounded ; nostril equally distant from the eye and the tip of the snout ; inter-orbital space narrower than the upper eyelid ; tympanum indistinct. Fingers free, first not extending quite as far as second ; toes nearly one-third webbed ; subarticular tubercles well developed ; inner metatarsal tubercle small, blunt, no outer metatarsal tubercle ; the hind limb being carried forwards along the body, the tarso-metatarsal articulation reaches the centre of the eye. Upper surface of body with flat glands ; belly smooth ; an elongated whitish or pink gland beneath the eye to the shoulder. Brownish or olive above, with irregular dark olive-green spots, a dark streak from the tip of the snout, through the eye to the shoulder, two crimson spots on the upper eyelids, under surface dull white. Fore limb in male very strong.

*Measurements in Millimeters.*

|                              |     |     |      |
|------------------------------|-----|-----|------|
| Length from snout to vent    | ... | ... | 54   |
| Length of head               | ... | ... | 18   |
| Width of head                | ... | ... | 20   |
| Length of snout              | ... | ... | 7    |
| Diameter of eye              | ... | ... | 5    |
| Width of interorbital region | ... | ... | 4    |
| Length of fore limb          | ... | ... | 30-5 |
| Length of hind limb          | ... | ... | 70   |

Type in Queensland Museum.

Locality : Goondiwindi.

This frog is closely allied to *L. tasmaniensis*, from which it differs by not having an outer metatarsal tubercle ; vomerine teeth much straighter and interrupted ; no vertebral line in immature or adult.

## A SECOND SPECIES OF ENOPLUSUS.

("OLD WIFE" FISH.)

By C. W. De VIS, M.A.

**ENOPLUSUS SEROTINUS**, n.s.

D. 7-1/14 A. 3/15 P. 12 V. 1/5.

Upper anterior profile moderately concave, the mouth not curved upward above the axis of the body and tail; the body not greatly elevated, its depth going  $1\frac{1}{3}$  times into its length, and rather more than twice into the length of the head and body; preorbital armed with five teeth; anterior nasal operculum semicircular, rising from a procurved elevated basal ridge; preoperculum with two large teeth at its angle, nineteen smaller on its hinder and thirteen on its lower edge, its cleavage upward rather high, reaching to a line from the centre of the caudal peduncle to the upper fourth of the eye; third spine of first dorsal two-thirds of the depth of the body at its insertion; spine of the soft dorsal  $2\frac{1}{4}$  times repeated equals the depth of the body at its insertion; ventral spine  $2\frac{1}{6}$  times repeated equals the height of the body over its insertion, its first and second rays barely reach the anal. Scales small in well-defined, flat or tumid rhombohedrons, striated at the base concentrically; lateral line distinctly, but perhaps irregularly tubulated, the tubules in places coarse. Length of head and body, 163 mm., of the head, 50 mm. Colouring.—All certain traces of parti-colouring, if it once existed, have succumbed to the destructive action of alcohol. The specimen is in so rigid and dilapidated a condition that no further information can be gathered from it.

Type in Queensland Museum.

Locality: Cairns.

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# ON THE GENUS "GONORRYNCHUS" (GRONOVIVS)

By J. DOUGLAS OGILBY.

THE presence of a *Gonorrhynchus* in Moreton Bay, being the first record of the genus from the State of Queensland, enables me to supplement the short account of the family given by Günther in the seventh volume of the British Museum Catalogue of Fishes, and copied *verbatim* by Macleay in his "Descriptive Catalogue of Australian Fishes," ii, pp. 190-1\*; and also to correct some trifling orthographic errors in Waite's notice of its occurrence in the neighbourhood of Port Jackson.† The discovery now announced is due, like so many others from the same locality, to the acumen of Mr. J. T. Jameson, of Woody Point, who, recognizing that the fish belonged to a species with which he was unacquainted, brought it to me for identification; the specimen, which is immature, is now in that gentleman's private collection. Waite's figure of the young fish (*loc. cit.*) might have been taken from Mr. Jameson's example, so accurate is it in every detail.

## FAMILY GONORRYNCHIDÆ.

*Ryynchœne* Kner, Reise Novara, Fisch. p. 342, 1867.

*Gonorrhynchidæ* Günther, B.M. Catal. Fish., viii, p. 373, 1868—Woodward, B.M. Catal. Foss. Fish., iv, p. 271, 1901.

Isospondylous fishes, with elongate subcylindrical body, covered with minute oblong adherent ctenoid‡ scales, which are arranged in regular series. Head conical, terminating anteriorly in a pointed cartilaginous snout, which overlaps the mouth, and bears on its lower surface one or two small barbels. Mouth inferior, small, and subovate; premaxillaries not protractile, forming the entire border of the upper jaw; behind them lie the slender maxillaries,

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\* Originally published in the Proceedings of the Linnean Society of New South Wales, vol. vi, 1881, pp. 254-5.

† Rec. Austr. Mus., v, 1904, p. 146, pl. xvii, fig. 3.

‡ In our young example the scales are perfectly smooth to the touch, nor can I detect any trace of terminal spinules under a strong lens.

which are without a supplemental bone. Jaws, vomer, palatines, and tongue, toothless. Opercular apparatus complete, the interopercle not enlarged. Dorsal and anal fins short, the latter below the middle of the dorso-caudal interspace; no adipose fin; caudal fin homocercal; pectorals inserted on the lower half of the body; ventrals well separated, opposite to or slightly in advance of the dorsal fin. Branchiostegals three or four. Frontal bones large, extending forward to above the mouth and backward to connect with the supraoccipital, which thus entirely separates the parietals; basis cranii simple; vertebræ with strong parapophyses.

The family, as at present constituted, consists of three genera, two of which are extinct. The more recent of these is *Notogoneus* Cope,\* to which the following three species have been referred. *N. osculus* Cope,† from the Eocene Beds (Green River Shales) of Wyoming, from whence, also, it is instructive to note, come the ancestors of our "barramundi" (*Osteoglossidæ*) and of our "rough-backed herrings" (*Potamalosa* and *Hyperlophus*); *N. squamosseus*‡ from the Upper Eocene of Aix-en-Provence; and *N. cuvieri*§ from the Upper Eocene of Montmartre. One of the most interesting points in connection with these early Tertiary gonorhynchids is that they belonged to a fresh-water fauna, as is shown by the other fishes, the remains of which are associated with them in these formations. The second extinct genus is *Charitosomus* Marck||, with two, perhaps three, species—*C. formosus*¶ from the Upper Cretaceous of Westphalia; *C. hakelensis*\*\* from the Cretaceous of Mount Lebanon,

\* *Notogoneus* Cope, American Naturalist, xix, Nov. 1885, p. 1091—id., Mem. Nat. Acad. Sci. Washington, iii, pt. 1, 1884, p. 163.

† *Notogoneus osculus* Cope, ibidd., pl., figg. 4 & 5—Woodward, Proc. Zool. Soc., 1896, p. 501, pl. xviii, figg. 1 & 2.

‡ *Cyprinus squamosseus* Blainville, Nouv. Dict. d'Hist. Nat., xxvii, 1818, p. 371 = *Sphenolepis squamosseus* Agassiz, Poiss. Foss., v., pt. 1, p. 13, pt. 2, p. 87, pl. xlv, 1844 = *Notogoneus squamosseus* Woodward, ibid., p. 502, pl. xviii, figg. 3 & 4.

§ *Sphenolepis cuvieri* Agassiz, ibidd., pp. 13 & 89, pl. xlv, figg. 1 & 2. = *Notogoneus cuvieri* Woodward, ibid., p. 503.

|| *Charitosomus* W. von der Marck, Fisch. Ober. Kreid. Westfalens, Palæontogr., xxxi, p. 257, 1885.

¶ *Charitosomus formosus* Marck, ibid., pl. xxiv, fig. 1.

\*\* *Spaniodon hakelensis* Davis, Trans. Roy. Dublin Soc. (2) iii, 1887, p. 591, pl. xxxiv., fig. 4 = *Charitosomus hakelensis* Woodward, Ann. and Mag. Nat. Hist. (7) ii, 1898, p. 41 2.



and possibly *C. lineolatus*\* from Sahel Alma in the same locality and formation. The genera associated with these Mesozoic fossils are essentially marine.

The following is a brief synopsis of the three recognized gonorhynchoid genera:—

- a. Dorsal and ventral fins inserted mesially.
- b. Head scaly; mouth wholly toothless. Fresh-water Tertiary fishes  
*Notogoneus*
- b1. Head naked; teeth present on the pterygoid and hyoid bones. Marine  
cretaceous fishes ... .. *Charitosomus*
- a1. Dorsal and anal fins inserted posteriorly.
- c. Head scaly; teeth present on the pterygoid and hyoid bones. Recent  
marine fishes ... .. *Gonorhynchus*

### GONORRYNCHUS Gronovius.

*Gonorhynchus* Gronovius, Zoophyl., i, p. 55, 1763.

*Gonorhynchus* Cuvier, Règne Anim., ed. i, p. 196, 1817 (*gonorhynchus*)—Cuvier Valenciennes, Hist. Nat. Poiss., xix, p. 207, 1846—Schlegel, Faun. Japon., Pisc. p. 217, 1846—Kner, Reise Novara, Fisch. p. 342, 1867—Günther, B. M. Catal. Fish., vii, p. 373, 1868.

*Rynchana* Richardson, Zool. Erebus and Terror, Fish. p. 45, 1845 (*greyi*).

Body anguilliform, compressed posteriorly. Scales subquad-rangular, with the free border feebly rounded. Lateral line complete, nearly straight, the tubes simple. Head almost wholly scaly; a single short median barbel in front of the mouth; lips thick and profusely ciliated; a transverse membranaceous lobe dependent from the roof of the mouth; maxillary entirely hidden when the mouth is closed. A small patch of short granular teeth on each pterygoid region, opposed to which is a rather larger patch on the hyoid arch. Nostrils anterior and contiguous. Eyes large, median, superolateral, covered with a transparent skin. Fins partly scaly; dorsal inserted near to the commencement of the posterior third of the body; pectoral asymmetrical; ventral nine-rayed; a long scaly appendage above the pectoral and ventral fins. Vent close to the anal fin. Gill-opening rather small; gill-membranes attached to the isthmus; four branchiostegals; pseudobranchiæ present; a fringed gill-like organ between the last gill-arch and the pectoral arch; gill-rakers long and slender; no air-bladder. Stomach simple, without blind sac; intestinal canal simple and straight. (γωνία, an angle; ρύγχος, snout).

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\* *Splenognathus lineolatus* Pictet Humbert, Nouv. Rech. Poiss. Foss. Mont Liban, p. 56, pl. iv, figg. 4-7, 1866.

Coasts of South Africa; Bourbon; St. Paul Island; New Zealand, Tasmania, Temperate Australia, Lord Howe Island, and Japan.

Small fishes, habitually frequenting sandy flats in shallow water, though sometimes taken at considerable depths; feeding on small mollusks, crustaceans, annelids, and the like; these they obtain by burrowing, the formation of the snout, combined with the conical head and elongate fusiform body, being eminently fitted for facilitating their passage through so dense a medium as sand; while the mobile cartilaginous snout forms an admirable tactile organ by which to locate its prey. The flesh is said to be firm and white, and of excellent quality.

I give below a synopsis of the species into which I propose to separate the remarkable fish which has of recent years been most commonly known as *Gonorhynchus greyi*. In making this division I have been chiefly guided by characters which must be regarded as structural, and cannot therefore be affected by the age of the individual.

### 1. GONORRHYNCHUS ABBREVIATUS Schlegel.

*Gonorhynchus abbreviatus* Schlegel, Faun. Japon., p. 217, pl. ciii, fig. 5, 1846: Nagasaki—Jordan Snyder, Proc. U.S. Nat. Mus., xxxi, 1907, p. 643, fig. 5: Yokohama.

Length of head 4·40 in that of the body; dorsal fin inserted posteriorly, the space between its origin and the root of the caudal 2·50 in its distance from the tip of the snout; eight anal rays; pectoral very large, its length 2·35 in its distance from the ventral.

Seas of Southern Japan.

### 2. GONORRHYNCHUS GONORHYNCHUS (Linnæus).

*Gonorhynchus* Gronovius, Zoophyl., No. 199, pl. x, fig. 2, 1763.

*Cyprinus gonorynchus* Linnæus, Syst. Nat., ed. 12, i, p. 528, 1766: Cape of Good Hope—Gmelin, Syst. Nat., i, p. 1422, 1788—Schneider, Syst. Ichth., p. 443, pl. lxxviii, fig. 1, 1801—Lacépède, Poiss., v, p. 570, 1803.

*Gonorhynchus gronovii* Cuvier & Valenciennes, Hist. Nat. Poiss., p. 207, pl. dlxviii, 1846: Bourbon.

*Cobitis gonorynchus* (Gronow) Gray, Catal., p. 41, 1854.

*Gonorhynchus brevis* Kner, Reise Novara, Fisch. p. 342, pl. xvi, fig. 1, 1867: Island of St. Paul.

Length of head 5·00 in that of the body; dorsal fin inserted anteriorly, the space between its origin and the root of the caudal 1·90 in its distance from the tip of the snout; ten anal rays; pectoral large, its length about 3·10 in its distance from the ventral.

Cape Seas; Bourbon; St. Paul.

### 3. GONORRYNCHUS FORSTERI nom. nov.

*Gonorrhynchus greyi*, Cuvier & Valenciennes, Hist. Nat. Poiss., xix, p. 212, 1846: New Zealand—Hutton, Fish. New Zealand, p. 61, & Hector, p. 119, pl. x, fig. 98, 1872. Not *Rynchana greyi* Richardson.

*Gonorrhynchus gonorrhynchus* Waite, Rec. Canterb. Mus., 1., No. 1, p. 11, 1907. Not *Cyprinus gonorrhynchus* Linnæus.

Length of head 5·00 in that of the body; dorsal fin inserted anteriorly, the space between its origin and the root of the caudal 2·15 in its distance from the tip of the snout; nine anal rays pectoral large, its length 3·10 in its distance from the ventral.

Seas of New Zealand. Closely allied to *G. gonorrhynchus*, from which it differs chiefly in the more posterior insertion of the dorsal fin.

### 4. GONORRYNCHUS GREYI (Richardson).

*Rynchana greyi* Richardson, Zool. Erebus & Terror, Fish. p. 44, pl. xxix, figg. 1-6, 1845: South-Western Australia.

Length of head 6·35 in that of the body; dorsal fin inserted posteriorly, the space between its origin and the root of the caudal 2·50 in its distance from the tip of the snout; nine anal rays; pectoral moderate, its length 3·50 in its distance from the ventral.

Coast of South-Western Australia.

### 5. GONORRYNCHUS PARVIMANUS sp. nov.

? *Gonorrhynchus greyi* Ogilby, Mem. Austr. Mus., No. 2, 1889, p. 72: Lord Howe Island. Not *Rynchana greyi* Richardson.

*Gonorrhynchus gonorrhynchus* Waite, Rec. Austr. Mus., v, 1904, p. 146: Narra-been. Not *Cyprinus gonorrhynchus* Linnæus.

Length of head 5·60 in that of the body; dorsal fin inserted anteriorly, the space between its origin and the root of the caudal 2·15 in its distance from the tip of the snout; nine anal rays; pectoral small, its length 5·30 in its distance from the ventral.

Coasts of New South Wales and Southern Queensland.

D. 12; A. 9; C. 16; P. 12; V. 9. Body a trifle wider than deep, its depth 14·8 in its length and 2·65 in the length of the head, which is 5·60 in that of the body.\* Snout pointed, projecting well beyond the mouth, in front of which is a short barbel. Diameter of eye 1·50 in the length of the snout and 3·85 in that of the head. Interocular region feebly convex, 2·50 in the eye. Dorsal fin commencing a little behind the last third of the body, the space between its origin and the root of the caudal 2·15 in its distance from the tip of the snout, as long as high, its height equaling the head behind the middle of the eye. Anal fin inserted one seventh nearer to the root of the caudal than to the ventral, shorter and lower than the dorsal, its height equaling the head behind the eye. Caudal fin emarginate, with the lobes rounded, the middle rays 1·45 in the outer and 2·00 in the head; length of free portion of tail thrice its depth, which is subequal to the diameter of the eye. Pectoral as long as the middle caudal rays and 5·30 in the space between its origin and the ventral; axillary appendage 2·25 in the length of the fin. Ventral inserted partly in front of the dorsal, its length 1·60 in its distance from the anal, the exobasal appendage shorter than that of the pectoral. Palest lemon yellow, with a series of dark brown spots above and below the lateral line, many of the upper ones being lost anteriorly and some of the posterior ones being confluent; snout and occiput brown-spotted; opercles with one large and several small brown spots. Dorsal, caudal, and anal fins with dusky tips, formed by innumerable, partly coalescing, brown dots, the caudal also with some basal and marginal spots (*parvus*, small; *manus* hand, *i.e.* pectoral fin).

Type in the collection of Mr. J. T. Jameson of Woody Point, Moreton Bay.

Length of type 88 millimeters.

Coasts of Eastern and South-Eastern Australia north to Moreton Bay. Probably also Lord Howe Island, Victoria, and Tasmania.

The Queensland National Museum possesses two small specimens without locality, which were doubtless taken in Moreton Bay.

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\* It will thus be seen that, contrary to the statement of Dr. Günther (*ibid.*, p. 374) that "young examples are constantly less elongate than adult," the opposite is *de facto* the case. Possibly the word "less" in the above quotation is a *lapsus calami* for "more."



# DESCRIPTIONS OF NEW OR INSUFFICIENTLY DESCRIBED FISHES FROM QUEENSLAND WATERS.

By J. DOUGLAS OGILBY.

THE following paper contains accurate descriptions of twelve species of fishes from the coast of Queensland, seven of which are considered new to science, while the remainder are redescrptions of species, which, like *Dules humilis* De Vis and *Serranus estuarius* Macleay, are not described with such detail as to be recognizable without the types.

The species described as new are—

1. CARCHARIAS ARENARIUS; fam. *Carchariidæ*; Moreton Bay, southward to Tasmania;
2. CARCHARHINUS STEVENSI; fam. *Galeidæ*; Bustard Bay and Nor-West Islet;
3. MYLIOBATIS HAMLYNI; fam. *Dasybatidæ*; Moreton Bay;
4. AMIA BERTHÆ; fam. *Cheilodipteridæ*; Dunk Island;
5. AMIA NIGRIPES; fam. ead.; Moreton Bay;
6. CHERODON WEBERI; fam. *Labridæ*; Aru Islands; and
7. CALLIONYMUS MACDONALDI; fam. *Callionymidæ*; Moreton Bay.

While the redescrbed species are :—

1. AMPHISILE CRISTATA De Vis; fam. *Centriscidæ*; coast of Southern Queensland;
2. POLYNEMUS SPECULARIS De Vis; fam. *Polynemidæ*; Rivers of Southern Queensland;
3. DULES HUMILIS De Vis; fam. *Centrarchidæ*; Queensland;
4. APISTUS CALOUNDRA De Vis; fam. *Scorpenidæ*; Caloundra; and
5. SERRANUS ESTUARIUS Macleay; fam. *Serranidæ*; Mary River.

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For one of these, *A. caloundra*, I find it necessary to form a new genus, *Apistops*, on account of the short pectoral fin and other characters, while it is necessary to found another new genus, *Paratrigla*, to accommodate those forms which, in addition to the large scales of *Lepidotrigla*, have a spinigerous lateral line such as *Trigla pleuracanthica* Richardson, etc.

## CARCHARIIDÆ.

## CARCHARIAS ARENARIUS sp. nov.

*Odontaspis americanus* (part.) \*Günther, Brit. Mus. Catal. Fish., viii, 1870, p. 392: Tasmania. Not Mitchill 1815.

*Odontaspis taurus* McCoy, Prodr. Zool. Vic., dec. vii, 1882, p. 13, pl. lxiv, figg. 1—*c.*: Hobson's Bay. Not Rafinesque 1810.

GRAY NURSE; SAND SHARK; SHOVEL-NOSED SHARK (Melbourne).

Depth of body 6.33, length of head 5.8, predorsal length 2.33, length of upper caudal lobe 4, of pectoral fin 7.2 in total length. Width of head 1.75, depth of head 1.5, preoral length 4.9, width of interocular 3, of internasal 4.45, of mouth 2.8, vertical height of first dorsal 3 in length of head.

Body fusiform and robust, its dorsal profile evenly and gently arched from the tip of the snout to the base of the caudal fin, which is not preceded by a pit. Head not depressed, its length 2.3 in the trunk. Snout short and obtusely pointed, its length 3 in the space between the eye and the first gill-opening, and 1.75 in the width of the mouth; space between inner angle of nostril and mouth 3.5 in its distance from the tip of the snout; tip of mandible rounded. Teeth in  $\frac{19-0-19}{17-0-17}$  series; first tooth of the outer series smaller than the second or third; fourth, and often fifth, tooth in the upper jaw much smaller than those adjacent to it and about as long as the tenth; the last few series in both jaws small and crowded. Eye inserted above the third quarter of the mouth-cleft, its diameter one fifth of the preoral length; interocular region strongly convex. Tail short, 1.33 in the head and trunk.

First dorsal fin inserted one half nearer to the ventral than to the pectoral, its anterior border convex, with the outer angle obtusely pointed; posterior angle also obtuse, not quite extending to above the origin of the ventral; vertical height of fin 1.15 in its basal length. Second dorsal smaller than the first, its distance from the origin of the first dorsal 1.55 in that from the tip of the tail;

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\* The South Australian example—10½ feet long—mentioned by Günther as being in the British Museum collection should rightly be referred to the very distinct *Carcharias tricuspidatus*, Day. (See Day, Fish. India, p. 713). Day's species also occurs on the New South Wales coast, but I am still uncertain as to its occurrence on the South Australian coast, as Zietz gives us no details and omits *C. tricuspidatus*, besides placing it and *Mitsukuina ovstoni* in a quite distinct family.

interdorsal space 2·1 in the base of the first dorsal. Caudal well developed, the upper angle pointed; anterior border of lower lobe 3·2 in the length of the upper. Anal originating below the last third of and about the same size as the second dorsal, its basal length one seventh more than its distance from the caudal, which is 1·65 in that from the ventral. Pectoral inserted a little nearer to the ventral than to the tip of the snout and not nearly extending to the vertical from the dorsal, the anterior and posterior borders convex, the outer feebly emarginate. Space between ventral and anal 2·7 in its distance from the pectoral.

Spiracle pore-like, above the angle of the mouth. Gill-openings wide, the first 7·5 times the eye-diameter and 1·15 in the third, which equals the fourth and fifth.

Sandy gray above, dull white below.

Described from a fine mounted specimen in the Queensland Museum; it was captured many years ago in Moreton Bay and measures 285 cm.

So far as I can ascertain the generic name *Triglochis* antedates *Odontaspis*, the synonymy apparently being—

*Triglochis* Muller & Henle, Arch. f. Nat. 1837, i, p. 396 (*taurus*).

*Odontaspis* Agassiz, Poiss. Foss., iii, pt. 2, 1838, p. 87 (*ferox*.)

## GALEIDÆ.

### CARCHARIAS STEVENSI sp. nov.

#### SHORT-TAILED SHARK.

Depth of body 5·3 to 5·75, length of head 4·9, predorsal length 3·35 to 3·55, length of caudal 3·5 to 3·8, of pectoral 4·2 to 4·5 in total length. Width of head 1·45, depth of head 1·75, preoral length 3·2, interocular width 1·9, internasal 3·15 to 3·35, width of mouth 2·25, vertical height of first dorsal 1·25 to 1·33, length of ventral 2·35 to 2·7 in length of head.

Body robust. Head somewhat depressed, its length 1·85 to 2·2 in that of the trunk. Snout short and blunt, its length 1·7 in the space between the eye and the first gill-opening and 1·4 in the

width of the mouth, which is one fourth more than its ramal length; space between inner angle of nostril and mouth 1.25 in its distance from the tip of the snout; tip of mandible rounded, not extending forward to the vertical from the front margin of the eye; labial grooves short, the upper rather deeper than the lower. Teeth in the jaws dissimilar, in  $\frac{1.4-1.1.4}{1.5-0-1.5}$  series, those of the upper triangular and slightly oblique, finely serrated on both edges, and with scarcely a trace of a notch; those of the lower narrow, erect, and entire, with a moderately broad base, the anterior pair very small. Eye inserted midway between the tip of the snout and the second gill-opening, its diameter 3.5 to 4 in the preoral length, which is 1.66 in the interocular width. Tail short, its length 1.25 to 1.4 in that of the head and trunk.

First dorsal fin inserted one half nearer to the pectoral than to the ventral, its anterior border linear, with the outer angle obtusely pointed; the posterior angle produced and acute, not nearly reaching to the vertical from the ventral; vertical height of fin one tenth more than its basal length. Second dorsal inserted about one eighth nearer to the tip of the tail than to the origin of the first dorsal; interdorsal space 1.2 in the predorsal length and 1.7 time the base of the first dorsal. Caudal fin long, the upper angle obtusely pointed; anterior border of lower lobe 2.1 in the upper lobe. Origin of anal opposite to that of second dorsal, its length 1.2 in its distance from the caudal, which is 1.2 to 1.4 in that from the ventral. Pectoral inserted a little nearer to the tip of the snout than to the ventral and extending to below the end of the first dorsal, the anterior and posterior borders convex, the outer emarginate; upper angle pointed, lower rounded. Space between ventral and anal 3 to 3.2 in its distance from the pectoral.

Gill-openings wide, the last 1.5 in the third, which is 2.5 to 3 times the eye-diameter.

Ash blue above, white below.

Described from two specimens, measuring 164 and 187 millim., taken by Mr. James Hirst Stevens in Bustard Bay and at Nor-West Islet.

The most noticeable character in this species is the extreme shortness of the postventral portion of the body, which is at least



one fourth less than the head and trunk. This would naturally suggest *Carcharias brachyurus* Günther, but my species differs from that in the short and broadly-rounded snout, the absence of a notch on the outer margin of the upper teeth, the absence of serrature in the lower teeth, the more anterior position of the pectoral fin, and the abnormal shortness of the space between the vent and the base of the caudal. In his description of *C. brachyurus* Dr. Günther makes no mention of this last character, and it is therefore to be inferred that the shortness of the caudal fin (not that of the tail) suggested the name to him.

## DASYBATIDÆ.

### MYLIOBATIS HAMLYNI sp. nov.

#### PURPLE BULL RAY.

Length of disk\* 1.85 in its width. Length of head† 2.75, of snout 4.75, width of interocular region 3, length of ventral 4 in length of disk. Width of mouth 1.5, diameter of eye 2.66, inter-nasal width 1.7 in length of snout.

Greatest width of disk slightly behind the front margin of the abdominal region, its anterior and posterior borders gently undulous, the outer angle obtusely pointed and bent conspicuously backwards. Tip of snout broadly rounded; internasal frenum smooth; hinder border of nasal flap truncate and coarsely fringed, the tips of the fringes lobate; anterior angle of nostril nearer to middle of flap than to tip of snout. Upper jaw with 6, lower with 9, series of dental plates, each consisting of 7 teeth, a wide transverse median, which gradually increasing in width from the front, and 3 small laterals directed outwards and backwards, and of equal size throughout. In the upper jaw the first median is as wide as, the last 2.2 times the 3 lateral teeth; in the lower the first is half as wide as, the third as wide as, and the last twice as wide as the lateral 3, fifth median tooth of lower jaw 2.6 times as wide as long. Eye small, 2.4 in the feebly concave interorbital‡ width, which is

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\* From tip of snout to posterior angle of vent.

† From tip of snout to first gill-opening.

‡ As distinguished from "interocular," the width of which is 4.15 times the eye-diameter.

one third more than the width of the mouth; interorbital fontanelle deepest and widest anteriorly, its greatest width 2.35 in its length. Body smooth.

Dorsal fin originating behind the tip of the ventrals, its vertical height 1.33 in its length, which equals the eye-diameter; tail long and slender,\* with a well developed spine, but without folds; outer border of ventral feebly rounded, its base 1.7 in its length.

Spiracle wide and slightly oblique, outwardly extending forward to the postero-inferior angle of the orbit, the inner opening wider than the eye-diameter. Gill-openings narrow and subequal, the middle one 2.4 in the same.

Upper surface and tail behind the spine purple, the pectoral fins shading outwards to olive-brown; lower surfaces cream-color.

Described from a young example obtained in Moreton Bay during January 1911; length of disk 152 millim., width 280.

The nearest ally of this species is the North-eastern Atlantic *M. aquila*, from which it differs, as noticed by Dr. Günther, in the much narrower median teeth, those of the upper jaw being rather less than 2, of the lower rather more than 2.5 times as wide as long.

Named for Dr. Ronald Hamlyn Hamlyn-Harris, the Director of the Queensland Museum.

## CENTRISCIDÆ.

### CENTRISCUS CRISTATUS (De Vis).

*Amphisile cristata* De Vis, Proc. Linn. Soc. N. S. Wales, ix, 1885, p. 872: Noosa Beach, Q.

#### SMOOTH-JOINTED RAZOR FISH.

D. iii, 12; A. 13 or 14; C. 10; P. 12; V. 3. Depth of body 4.65 to 5.15, length of head 2.66 to 2.75, of snout 3.5 to 3.75, of terminal plate 2.6 in length of body to root of caudal fin. Length of first lateral plate 1.65 to 1.85, of first dorsal spine 2 to 2.15, height of soft dorsal 3.65, of anal 6.35 to 6.6, of caudal 4.4 to 4.55, of pectoral 3.15 to 3.4 in length of head.

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\* The tail is unfortunately broken, the part still left being 2.2 times the length of the disk.

Upper profile of body rounded anteriorly, sharply ridged posteriorly, the sides rounded and inferiorly attenuated, so as to form an exceedingly fine cultrate cutting edge, its greatest width 1.5 to 1.6 time the eye-diameter. Upper profile of head linear to above the eye, from whence there is a scarcely perceptible ascension to the suture of the first dorsal plate, beyond which the contour of the back is evenly and gently rounded to slightly behind the suture of the terminal plate, which is linear, with the extremity slightly bent downwards. Diameter of eye 2.1 to 2.4 in the postorbital portion of the head, and equal to or a little more than the inter-orbital region, which is strongly convex, and longitudinally striated, the striæ originating from a low knob above the posterior border of the eye, from which also fan-like striæ project over the temporal and occipital regions. Opercle tetragonal, as long as or a little longer than deep. Lateral plates mostly sculptured like the head, the three middle plates with the striæ radiating from a central knob, those of the first interrupted by an oval pitted depression, thrice as long as wide, and rather longer than the pectoral fin; those of the last longitudinally striated throughout nearly its entire length, the knob from which they radiate being situated near the suture; this plate is also deeply grooved immediately below the dorsal ridge; second and third lateral plates of equal width, twice as long as the first, the third narrower, 1.25 in the preceding plate; second lateral plate as high as long, its lower edge much nearer to the ventral than to the dorsal profile, and almost wholly absorbed by a fan-shaped opaque area, which marks the position of the air-bladder; sutures of all the plates smooth. Ventral plates 12, the first very small; the second tetragonal with the anterior suture one third of the height of the posterior; the third fan-shaped; the fourth largest, with its upper border nearly twice as long as the lower, and having the pectoral fin inserted in a depression, which occupies the postero-superior angle of the plate; the fifth, sixth, and seventh about equal, the others gradually decreasing in size to the last.

Spinous dorsal with the first ray close to and parallel with the terminal spine, straight except at the extreme tip, which is slightly bent downwards and rather longer than the operculo-pectoral interspace; second and third spines graduated and strongly curved throughout, the second produced beyond the membrane with the

free tip dilated, the third ending with the membrane and not dilated. Second dorsal with a slight downward obliquity, the upper rays much the longest, 2.8 in the snout and 1.7 in the spine, the lower rays very short, almost rudimentary. Caudal fin feebly emarginate, 1.25 in the longest dorsal rays, the peduncle, which is covered with soft naked skin, being the only unarmored portion of the body. Anal fin rounded, the rays directed downward, the anterior middle longest, 1.4 in length of the caudal. Length of head behind the anterior border of the eye 1.95 in the space between the opercle and the pectoral, the outer border of the fin truncate. Ventral inserted on the suture between the fifth and sixth ventral (second and third abdominal) plates, and midway between the lower soft dorsal ray and the orbit, its length in the male twice the eye-diameter.

Life-colors: Silvery; a deep red band from the base of the snout to the eye, followed by a golden spot on the temporal region; continuous with this is a red or orange band, which bisects the opercle, passes through the base of the pectoral, and extends along the side to the root of the terminal spine, the posterior portion being curved upward and sometimes supplemented by a short parallel superior band; abdominal ridge pale yellow, crossed by eight to ten oblique red bars directed downwards and backwards.

Preserved in a weak formalin solution the greater part of the body becomes a dull red gold, which deepens towards the ventral surface, upon which the sutures and the abdominal bars stand out conspicuously as silvery lines and bands; dorsal plates and terminal spine dull yellowish gray; throat and breast silvery. Proximal half of snout golden brown, with a narrow darker bar from the eye through the nostrils; suborbital region, base of snout, and edge of subopercle silvery, the rest of the opercles bluish black.

Dry examples are a dull grayish silvery, the region between the ventral and anal fins dull yellow, and the proximal half of the snout as in the preceding.

Total length 300 millim.

Coast of Southern Queensland between Moreton Bay and Hummocky Island, common on sandy or muddy ground in water varying from 7 to 33 fathoms.



Described from four specimens, 250 to 297 millimeters long, the largest of which, Mr. De Vis' type, was picked up on the beach at Noosa, and is a sun-dried example, with all the fins except the spinous dorsal and anal broken short off, so that the figures given in the original description cannot be relied on. Two of the remaining specimens are in the possession of the State Inspector of Fisheries, the other in the collection of the Amateur Fishermen's Association of Queensland, and were respectively taken off Boomerang Hill, Jenny Lind Buoy (Port Curtis), and Cape Capricorn; from these three examples, which are perfect, the greater part of the above description has been taken. In addition to the five localities mentioned above examples were trawled off Double Island Point, Hervey, Platypus, and Bustard Bays.

From the only other known species, *C. scutatus*,\* our fish may be distinguished by the following characters, those of the former being taken from Günther's detailed description.†

- |   |     |     |     |     |     |     |     |     |                  |
|---|-----|-----|-----|-----|-----|-----|-----|-----|------------------|
| <i>a</i> <sup>1</sup> . Opercle ovate, nearly twice as long as deep; sutures of lateral plates serrated               | ... | ... | ... | ... | ... | ... | ... | ... | <i>Scutatus</i>  |
| <i>a</i> <sup>2</sup> . Opercle tetragonal, as long as or a little longer than deep, sutures of lateral plates smooth | ... | ... | ... | ... | ... | ... | ... | ... | <i>Cristatus</i> |

## POLYNEMIDÆ.

### POLYDACTYLUS SPECULARIS (De Vis).

*Polynemus specularis* De Vis, Proc. Linn. Soc. N. S. Wales, viii, 1883, p. 285: Brisbane River.

#### LESSER TASSEL FISH.

D. viii, i 14 or 15; A. iii 16 or 17; P. 16 + vii: Sc. 6/53 to 55/13 or 14 Depth of body 2·8 to 3, length of head 3·6 to 3·75, of caudal fin 2·85 to 3·05, of pectoral 3·45 to 3·6, of ventral 5·8 to 6·25 in length of body. Length of snout 4·25 to 4·6, diameter of eye 4·25 to 4·5, width of interorbit 3·7 to 4, length of maxillary 2·15 to 2·3, height of spinous dorsal 1·15 to 1·25 in length of head.

Body elliptical, the dorsal contour rather higher than the ventral; caudal peduncle as deep as long, its least depth 1·7 to 2·25 in the depth of the body. Upper profile of head undulous;

\* *Centriscus scutatus* Linnæus, Syst. Nat., ed. 10, 1758, p. 336: East Indies.

† *Amphisile scutata* Günther, Brit. Mus. Catal. Fish., iii, 1861, p. 525: Philip-pines, Singapore, China.

snout obtuse, its anterior border linear or feeble convex and strongly declivous, as long as the eye-diameter; tip of upper jaw vertically below the anterior nostril; diameter of eye 1.05 to 1.2 in the convex interorbital width; adipose lid entirely covering the eye and cheek, extending forward round the nostrils, and backward more than midway to the preopercular border; maxillary extending beyond the eye, the width of its distal extremity equal to the depth of the preorbital, and 1.85 to 2.15 in the eye-diameter. Vertical limb of preopercle evenly and finely serrated. Head entirely scaly, except the anterior border of the snout.

Length of first dorsal 1.85 to 2 in that of the second, and 2 to 2.2 in that of the third and longest spine, which is equal to or a little less than the anterior soft rays. Middle caudal rays 2.5 to 2.6 in the upper lobe. Anal originating below the fourth or fifth dorsal ray and 1.1 to 1.33 in the length of the soft dorsal; third spine longest, about 2.5 in the anterior rays, which are 1.2 to 1.4 in those of the soft dorsal. Pectoral pointed, a little longer than the head, and extending to or not quite to the vertical from the vent; upper free ray longest, as long as or a little longer than the undivided fin. Ventral reaching beyond the vent, its length 1.66 to 1.8 in that of the pectoral.

Gill-rakers longer than the gill-fringes, 18 or 19 on the lower branch of the anterior arch, the longest 1.25 in the eye-diameter.

Yellow or pale yellowish brown, the back tinged with darker brown or plumbeous, all the scales, but especially those of the occiput, nape, and anterior portion of the back, powdered with dusky dots; lower surface of snout with similar but larger dots crowded together to form a blackish patch. Fins yellowish brown, the spinous dorsal, pectorals, tips of soft dorsal, anal, and ventrals, edges and lobes of caudal profusely dotted with dull blue or black.

Described from four specimens, measuring from 189 to 230 millim., caught in the Brisbane River and Moreton Bay. I have also examined Mr. De Vis' type, a wretched specimen, in the Queensland Museum. This species agrees closely with *Polynemus multiradiatus* Günther,\* so far as one may judge from the few characters given by that author; if, however, the locality given be correct, our species is probably valid. I do not know what Klunzinger's fish of the same name from South Australia may be.

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\* Brit. Mus. Catal. Fish, ii, 1860, p. 324: China.

## CENTRARCHIDÆ.

## KUHLIA HUMILIS (De Vis).

*Dules humilis* De Vis, Proc. Linn. Soc. N. S. Wales, ix, 1884, p. 395 : Queensland.

## SILVER FLAGTAIL.

Pl. vi, fig. 1.

D. x 11 ; A. iii 11 ; P. 14 : Sc. 4/50/11. Depth of body 2·5, length of head 2·85, of caudal fin 3·15, of pectoral 4·25, of ventral 4·25 in length of body. Depth of peduncle 2·75, length of snout 3·75, diameter of eye 2·75, width of interorbit 3·6, length of maxillary 2·6, longest dorsal spine 1·5, longest anal 2·3 in length of head.

Body ovate, the dorsal and ventral contours about equally arched, its depth one eighth more than the length of the head ; caudal peduncle slender, its length 1·35 time its depth, which is 3·1 in that of the body. Upper profile of head and nape rectilinear and moderately oblique, with a slight convexity in front of the dorsal ; snout short and rounded, 1·35 in the eye-diameter, and about equal to the flat interorbital width ; lower jaw projecting ; maxillary extending to below the anterior border of the pupil, the width of its distal extremity 3·66 in the eye-diameter. Preorbital and preopercle feebly serrulate ; opercular spines strong, the lower the longer. Upper surface of head wholly naked ; cheeks and opercles with finely ciliated scales, in four series on the former.

Dorsal originating behind the base of the pectoral, its outer border strongly arched ; first spine shortest, 1·4 in the ninth, which is 1·6 in the last ; fourth longest, a little longer than the fifth and one fourth longer than the anterior ray ; last spine nearly as long as the third or sixth. Middle caudal rays 1·6 in the outer and as long as the head in front of the hinder margin of the eye, the lobes acutely pointed. Anal originating below the first dorsal ray, its distance from the caudal 1·7 in its length ; second spine a little shorter than the third, which is rather less than the tenth dorsal and rather more than the anterior rays. Fourth pectoral ray longest, 1·5 in the length of the head, and not extending to the vertical from the vent. Ventral as long as the pectoral, reaching to the anal.

Gill-rakers 22, the longest half the eye-diameter and twice as long as the gill-fringes.

Uniform silvery, darker on the back. Lobes and tips of the inner caudal rays dark brown.

Described from a Queensland specimen 128 millim. in total length, 102 to the root of the caudal fin.

This species differs from *Kuhia mato* (Lesson),\* with which it was associated by Boulenger,† in the following characters among others:—

Depth of body 2·66 or less, length of head 3·33 or less in length of body; snout 1·5 or less in eye; interorbit 3 in head; scale-formula 5·6/53-56/14-15; fifth dorsal spine longest; anal longer than its distance from caudal, which is deeply forked, its middle rays 2·5 or less in the outer ... .. *Mato*.

Depth of body 2·5, length of head 2·85 in length of body; snout 1·35 in eye; interorbit 3·6 in head; scale formula 4/50/11; fourth dorsal spine longest; anal nearly twice as long as its distance from caudal, which is deeply emarginate, its middle rays 1·6 in the outer ... .. *Humilis*.

## CHEILODIPTERIDÆ.

### AMIA BERTHÆ sp. nov.

#### MANY-BANDED PERCELLE.

Pl. v, fig. 1.

D. vii, i 9; A. ii 8; P. 16: Sc. 2/23/8. Depth of body 2·5, length of caudal peduncle 4·8, of head 2·6, of caudal fin 3·8, of pectoral 4·15, of ventral 3·7 in length of body. Depth of caudal peduncle 2·33, length of snout 3·8, diameter of eye 3, width of interorbit 4, length of maxillary 2, longest dorsal spine 1·9, longest ray 1·6, second anal spine 2·6, longest ray 1·6 in length of head.

Body robust, the dorsal contour much more arched than the ventral, its depth a little more than the length of the head; caudal peduncle short and deep, its least depth 1·25 in its length. Upper

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\* Lesson's name not only has page-precedence over that of Cuvier and Valenciennes, but the latter authors took their description from Lesson's figure only (*Nous ne connaissons encore cette espèce que par un dessin fait d'après nature* .....) not from the fish itself as did the former author. That Lesson's name was spelt incorrectly, possibly through a mere clerical or press error, does not invalidate its or its author's claim.

The true *K. mato*, the type-locality of which is Tahiti, though said to range from the Hawaiian Archipelago eastward and southward as far as the Cape Seas, has not been as yet recorded from Australia; it is therefore possible that the South African and Mauritian species may on further examination prove, like the Australian, to be separable.

† No blame can be attached to Dr. Boulenger for this erroneous identification, for the description of *Dules humilis* is so drawn up that, without examination of the type, it would be impossible to place it with any certainty. For instance, the length given by its author—4 inches—is that of the body (s.c.), but in the comparative measurements, while the depth of the body is given to that scale, the length of the head is taken from the total length (c.c.) of 5 inches.



profile of snout linear and moderately declivous, of head feebly concave, of nape gently rounded; length of snout 1.25 in the diameter of the eye, which is 1.33 time the convex interorbital width. Upper jaw slightly the longer; maxillary extending to below the posterior border of the pupil, the width of its distal extremity 2.1 in the eye-diameter. Outer edge of preopercle denticulated throughout its entire length. Scales adherent; nape scaleless; a single interdorsal scale.

First dorsal fin originating slightly in advance of the pectoral, well developed, the spines strong, the second 2.25 in the third, which is a little longer than the fourth and 1.15 in the second and third rays. Caudal rounded. Anal originating below the first dorsal ray, its rays as high as those of the dorsal. Pectoral rather short, scarcely extending to the vertical from the anal. Ventral long, the second ray longest, reaching to the second anal ray, and somewhat longer than the pectoral, its spine a little shorter than that of the soft dorsal, which is 1.2 in the height of the spinous.

Gill-rakers  $4 \times 12$ , the longest 2.35 in the eye-diameter.

Pale vinous brown, the sides with seven dark brown longitudinal bars; the first commencing below the origin of the first dorsal, the second on the suprascapular region, and the third at the upper angle of the opercle; these three run parallel to the dorsal profile and terminate at the base of the upper half of the caudal; the lower four bars are straight, the upper (or fourth body-bar) from behind the upper third of the eye unites with the third below the last rays of the soft dorsal, the fifth from behind the middle of the eye to the base of the lower caudal rays, the sixth and seventh respectively from behind and below the pectoral to the base of the last anal rays, the sixth being curved abruptly downwards posteriorly; in addition to these, there are three broader transverse bands—the first below the spinous dorsal, the second below the posterior half of the soft dorsal, and the third round the base of the caudal. Occiput and under surface of head pale yellowish brown, the nape with a bluish gloss; opercle with a small round brown spot on its upper half and a large blackish blotch on its lower. Spinous dorsal brown, with the tips of the longer spines darker; soft dorsal with a large round

black spot between the fourth and seventh rays; anal with a similar but much smaller spot between the fourth and fifth rays; caudal and pectorals uniform light brown; ventrals much darker.

Described from a single specimen, 80 millim. long, forwarded from Dunk Island to the A.F.A.Q. Museum, by Mr. E. J. Banfield, Cat. No. 1515.

This species differs from every other Queensland *Amia*, except *A. nigripes* (q.v.), in the presence of a complete nuchal shield which entirely excludes any predorsal scales.

I have much pleasure in naming this beautiful species after Mrs. Bertha Hamlyn, the wife of Dr. Hamlyn-Harris, Director of the Queensland Museum, who has kindly permitted me so to designate it.

**AMIA NIGRIPES** sp. nov.

**BLACK-FOOTED PERCELLE.**

Pl. v, fig. 2.

D. vii, i 9; A. ii 8; P. 15: Sc. 2/23/6. Depth of body 2, length of head 2.5, of caudal fin 4, of pectoral 4, of ventral 3 in length of body. Depth of caudal peduncle 2.4, length of snout 3.9, diameter of eye 3.4, width of interorbit 3.65, length of maxillary 1.75, longest dorsal spine 2, longest ray 1.7, second anal spine 3.3, longest ray 2.1 in length of head.

Body short and stout, the ventral contour more arched than the dorsal, its depth one fifth more than the length of the head. Upper profile of head and nape linear throughout; length of snout 1.15 in the diameter of the eye, which is slightly more than the feebly convex interorbital width. Lower jaw projecting; maxillary extending to below the middle of the orbit, the width of its distal extremity 2 in the eye-diameter. Outer edge of preopercle feebly denticulated throughout its entire length. Scales adherent; nape scaleless; 2 interdorsal scales.

First dorsal fin well developed, the spines strong; second rather less than half the third, which is the longest, 1.15 in the second and third rays. Caudal rounded. Anal originating below the second dorsal ray. Pectoral short, not extending to above the vent. Middle ventral ray longest, reaching to the anal rays, and 1.33 time the length of the pectoral, its spine 1.3 in that of the spinous dorsal and 1.15 time that of the soft.

Gill-rakers  $5 \times 13$ , the longest 2 in the eye-diameter.

Dark brown, with a large round blackish spot between the pectoral fin and the lateral line. Cheeks paler, with an oblique blackish bar from below the middle of the eye to the angle of the inner preopercular ridge; lower surface of head and throat pale yellow. Dorsal, anal, and ventral fins black, the former broadly edged with yellow; caudal and pectorals uniform yellow.

Described from a specimen, measuring 84 millim., captured at Sandgate by Mr. G. Shaw; Cat. No. A.F.A.Q. Mus., 1221.

## SERRANIDÆ.

### EPINEPHELUS ESTUARIUS (Macleay).

*Serranus estuarius* Macleay, Proc. Linn. Soc. N. S. Wales, viii, 1883, p. 200 : Mary River.

#### SPOTTED RIVER COD.

D. xi 14 to 16; A. iii 8; P. 19: Sc. 18 to 20/108 to 116/40 to 44; L. 1. 60 to 64. Depth of body 3·35 to 3·45, length of head 2·66 to 2·8, of middle caudal rays 3·95 to 4·15, of pectoral fin 4 to 4·3, of ventral 5·3 to 5·5 in length of body. Length of snout 3·75 to 4·05, diameter of eye 6·2 to 6·55, width of interorbit 5·1 to 5·75, length of maxillary 2, longest dorsal spine 2·9 to 3·1, longest anal 3·9 to 4·35 in length of head.

Body elliptical; caudal peduncle about as deep as long, its least depth 2·55 to 2·75 in the depth of the body. Upper profile of head linear and moderately oblique; width of preorbital 1·8 to 2 in the eye-diameter, which is 1·55 to 1·75 in the length of the snout and 1·1 to 1·3 in the flat interorbital region; nostrils subequal; lower jaw projecting; maxillary extending to below or beyond the vertical from the posterior border of the eye, the width of its distal extremity 1·33 to 1·55 in the eye-diameter. Lateral mandibular teeth biserial anteriorly; canines moderate. Vertical limb of preopercle convex and serrated; angle rounded, not or but slightly produced, and armed with 3 to 5 strong spines; upper opercular spine rather nearer to the middle and inserted further forward than the lower spine; opercular flap pointed, its upper border linear or feebly concave. Lateral scales ciliated, those of head, nape, throat, breast, abdomen, and a narrow strip along the bases of the vertical fins cycloid; upper half of maxillary with or without a band of minute scales.

Dorsal fin originating above the axil of the pectoral ; first spine 1.55 to 1.7 in the last, which is equal to or a little shorter than the second or tenth ; fourth to sixth spines longest, scarcely longer than the third and seventh, and 1.3 to 1.5 in the middle rays ; soft dorsal and anal fins rounded ; third anal spine as long as or a little longer than the second, and 1.7 to 1.95 in the middle rays, which are slightly shorter than those of the dorsal. Caudal rounded. Pectoral extending to the vertical from the seventh or eighth dorsal spine, its length equaling or slightly exceeding the postorbital portion of the head. Ventral obtusely pointed, the second ray longest, not reaching so far back as the pectoral, and not nearly to the vent,

Gill-rakers as long or scarcely as long as the gill-fringes, 17 on the lower branch of the anterior arch, of which 7 or 8 are rudimentary, the longest 1.6 to 2.33 in the eye-diameter.

Life-colors: Purplish brown, the lower surface of the head, interopercles, breast, and abdomen bluish gray ; upper surface and sides of head and body with scattered orange spots, which are scarcely as large as the pupil and are more numerous on the pectoral region than elsewhere ; on the lighter areas the spots are rather larger and lilaceous, except on the mandibles, where they are greenish yellow ; a large blue-gray spot, bordered above by a purple band on the cheek close behind the maxilla. Iris golden, with a narrow purple inner rim, and clouded above with purple. Fins olive-green, the dorsal orange-spotted, chiefly along the base ; base and lower half of caudal with rather obscure darker spots ; anal and pectoral fins immaculate, the latter with a narrow paler border ; outer portion of ventral membranes lavender.

The above is the normal coloration of specimens taken in the sea, while those captured in fresh or brackish water are, as might be expected, uniformly duller ; these are purplish brown above, gradually shading to a dull yellowish white below, the back with or without lighter blotches ; head, body and fins with numerous round black spots, as large as or smaller than the pupil.

Other noticeable differences are that in the ocean fish the preopercular serræ are stronger, especially at the angle ; the band of scales on the maxillary is more evident ; and the gill-rakers, though



similar in number, and bearing the same proportion of functional to rudimentary, are decidedly longer.

Boulenger\* includes this species, with a query, in the synonymy of *Epinephelus tauvina*, but it differs from that species notably in the greatly increased number of scales above the lateral line, the biserial mandibular teeth, the rounded and strongly armed preopercular angle, the rounded spinous dorsal in which the fourth to sixth spines are appreciably longer than those behind them, etc.

Length of body 350 millim.

Coasts and rivers of Southern Queensland.

The Estuary Cod has so far been recorded only from the short stretch of coast lying between Moreton Bay and the Mary River; but, as it is common in all suitable localities within these limits, it doubtless ranges considerably further to the south and north. The specific name given by Macleay to this species is eminently suitable, as it is essentially a river fish, being much less frequently caught in pure salt water than in the mixed water of our estuaries; nor does it confine itself to these alone but pushes upwards far beyond the tideway. Residents on the Upper Logan tell me that it is not uncommon in the deeper reaches of that river, and I have been also informed by several reliable correspondents that it is well known to anglers in the Noosa lakes (which are sweet water), is permanently established, and breeds there; one of Brisbane's most successful amateur anglers has also mentioned having taken it in the Lockyer River at Gatton. Negative evidence as to its preference for more or less fresh water may be adduced from the fact that during the "Endeavour's" six weeks' fishing in Queensland waters not a single example was obtained either by net or line. It is an excellent table fish, and is always looked upon as a valuable prize by anglers.

Described from three specimens, measuring over all from 312 to 357 millim., taken in Moreton Bay and the Brisbane River (2).

## LABRIDÆ.

### CHÆRODON WEBERI sp. nov.

D. xiii 7; A. iii 10; P. 15: Sc. 3/27/10. Depth of body 2·6, of caudal peduncle 6·2, length of head 3, of caudal fin 4·55, of

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\* Brit. Mus. Catal. Fish., ed. 2, i, 1895, p. 244.

pectoral 3.35, of ventral 4.2 in length of body. Length of snout 2.15, diameter of eye 4.5, width of interorbit 4.35, last dorsal spine 2.75, last anal 2.6 in length of head.

Dorsal contour of body linear or but feebly arched, considerably higher than the ventral contour, its highest point above the base of the pectoral. Head as deep as long; upper profile of snout sublinear and rather strongly declivous. Eye small, its diameter 1.5 in the depth of the preorbital. Cleft of mouth extending to below the anterior nostril. Anterior canines moderate; tips of lateral mandibular teeth prominent; no posterior canine. Preopercle very finely serrated. Cheeks with seven series of non-imbricate scales; some of the opercular scales as large as the breast-scales; scales at the base of the caudal fin somewhat enlarged and angulated.

Soft dorsal and anal fins of moderate height, obtusely pointed and subequal posteriorly, the penultimate rays just reaching beyond the base of the caudal. Caudal fin feebly rounded. Pectoral rounded, the fourth ray longest, but little longer than the third, and extending to below the twelfth scale of the lateral line. Ventral obtusely pointed, the second ray longest, reaching to or not quite to the vent.

Upper surface and sides purple, shading into vinous gray below, the latter color extending upward as a conical bar from below the middle of the appressed pectoral to the lateral line,\* and posteriorly suffusing the whole peduncle above the lateral line, the purple being represented only by a narrow band below and including that line. Cheeks and opercles with a rufous tinge, and closely studded with small light blue spots. Dorsal fin purple, except the last two rays, which are vinous like the peduncle, the spinous portion with a faint darker longitudinal band on its outer half; caudal fin dull blue-gray; anal, ventral, and pectoral fins grayish yellow, the latter with a blackish base.

I have much pleasure in naming this handsome species after my valued correspondent Professor Max Weber of Amsterdam, who, like myself, has recently paid some attention to the fishes of the Aru Islands.

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\* Sometimes this bar is faint, rarely absent.

Described from 7 examples, measuring between 121 and 197 millim., obtained by Mr. John Colclough, at Dobo, Aru Islands, and by him presented to the A.F.A.Q. Museum. Cat. No. 1170.

## SCORPÆNIDÆ.

Just twenty-five years ago Mr. De Vis, under the name *Apistus caloundra*, described a new Queensland fish from the Moreton District. Of the differences between his species and the typical *Apistus (alatus)* he writes—"To these, the fish now brought under notice is closely allied; and, notwithstanding that it differs in two structural features of some importance—namely, in having but fourteen spines in the dorsal fin, and the pectoral reduced to a size unfitting it for an organ of flight—I refer it to the same genus *Apistus* because it appears to me preferable to relax somewhat the character of a genus founded on two species only, rather than burden the system with a new one, which does not seem necessary."

There are, however, other differences which seem to me to justify generic recognition, which I therefore accord to it under the name

### APISTOPS gen. nov.

Lateral line incomplete ceasing on the peduncle; orbital ridges smooth; a short, but strong and acute, humeral spine present; dorsal fin but little notched, with fourteen spines; pectorals comparatively short, not reaching to the soft anal rays.

### APISTOPS CALOUNDRA (De Vis).

*Apistus caloundra* De Vis, Proc. Roy. Soc. Queensl., ii, 1886, p. 145 : Caloundra.

### SHORT-ARMED WASP FISH.

D. xiv 9; A. iii 7: Sc. 7/52/17. Depth of body 3·9, length of head 2·66, of caudal fin 4, of pectoral 2·25, of ventral 3·5 in length of body. Length of snout 3·4, diameter of eye 4·5, width of inter-orbit 7·8, length of maxillary 2·35, longest dorsal spine 2·25, longest anal 2·6, detached pectoral ray 2·6 in length of head.

Superior projection of lower jaw shorter and more obtuse; five barbels, the median very short; anterior lateral pair inserted but little behind the base of and not much longer than the median; posterior pair a little longer, about midway along the mandible.

Mouth but little oblique, the tips of the premaxillaries somewhat below the level of the eye, the posterior border of which is midway between the tip of the opercle and that of the snout; maxillary extending to rather beyond the anterior border of the pupil, the width of its distal extremity half the eye-diameter; interorbit narrow and concave, with a pair of feeble parallel ridges, which expand behind into a cup-shaped figure enclosing the occiput; width of interorbit 1.75 in the eye-diameter; supraorbital ridge everywhere smooth. Posterior spine of preorbital curved and directed backward; preopercle with four spines, the upper long and acute, the others short and blunt; a short but strong and sharp humeral spine. Cheeks covered by a bony plate, bearing a well-defined median ridge from which run oblique striæ; a few small scales behind the tip of the maxillary.

Length of soft portion of dorsal 2.35 in that of the spinous; first dorsal spine one fifth shorter than the last, which equals the two preceding ones and the third, and is 1.2 in the tenth, which slightly exceeds the pair adjacent to it; second, third, and fourth rays longest, but not extending so far back as those which immediately succeed them and just reach the base of the caudal. Caudal fin rounded. Anal originating below the twelfth dorsal spine, the middle rays longest, not quite so long as, but reaching further back, than those of the dorsal; first spine 1.45 in the second and 1.7 in the third, which is 1.25 in the longest ray. Pectoral short, the first ray longest, extending to above the last anal spine; detached pectoral ray about one third the length of the first ray; base of fin 4.7 in its length. Ventral large, 1.55 in the pectoral.

Gill-rakers  $4 \times 10$ , the longest 1.75 in the eye-diameter.

Coloration (*fide* De Vis).—"A broadly white-edged black blotch between the ninth and twelfth spines of the dorsal; top of the webs between the first two spines also black. Upper surface of the snout, a broad band across the occiput, a narrow curved band from the snout through the edge (? eye) to the base of the opercular spine, two large blotches on the upper part of the trunk connected and apparently traversed by three longitudinal bands, two horizontal bands on the soft dorsal, three vertical bands on the caudal, and the lower third of the pectoral black."



At the present time the body of the fish is dull yellow without any markings whatever; there is a narrow smoky brown bar, broadest mesially between the postero-superior angles of the eye, and a much interrupted curved lighter band from the side of the snout to the base of the preopercular spine. The dorsal spot and the caudal are still present but much faded, and the lower pectoral ray and outer two thirds of the ventrals are smoky brown.

Described from the type specimen in the Queensland Museum, 104 millim. long; Reg. No. I. 11/27.

## TRIGLIDÆ.

Finding it necessary to establish a new genus for the reception of those species of trigloid fishes hitherto associated with *Lepidotrigla*, but differing therefrom in the presence of a spinigerous lateral line, I propose to separate these by the name *Paratrigla*, taking Richardson's *Trigla pleuracanthica* as the type. The key to the Queensland *Triglidae* will therefore be as follows:—

- a*<sup>1</sup>. No palatine teeth; a series of spinigerous shields along the base of the dorsal fin.
- b*<sup>1</sup>. Scales rather large, in about 50 to 65 transverse series.
  - c*<sup>1</sup>. Lateral line unarmed ... .. 1. *Lepidotrigla*.
  - c*<sup>2</sup>. Lateral line spinigerous ... .. 2. *Paratrigla*.
- b*<sup>2</sup>. Scales small, in more than 100 transverse series;
  - lateral line unarmed ... .. 3. *Chelidonichthys*.

## CALLIONYMIDÆ.

### CALLIONYMUS MACDONALDI sp. nov.

#### GRAY-SPOTTED DRAGONET.

Pl. vi, fig. 2.

D. iv, 9; A. 9; P. 18. Depth of body 9·4, width of body 5, length of head 2·85, of first dorsal spine 11·75, of caudal fin 4, of pectoral 4, of ventral 3·2 in length of body. Depth of head 3·2, width of head 1·4, length of snout 3·9, diameter of eye 4·8, length of preopercular spine 4·25, longest dorsal ray 2·1, longest anal 2·6 in length of head.

Body much depressed, nearly flat above, the greatest depth at the base of the pectoral; least depth of caudal peduncle 1·6 in the

eye-diameter. Snout obtuse, one fifth wider than long, its depth 1·4 in its length ; eyes separated by a narrow groove, its width 3·65 in the eye-diameter, which is 1·25 in the length of the snout and 3·4 in the width of the head ; orbital ridges elevated, extending round the upper half of the eye ; rostral ridges short and well developed. Maxillary extending to below the nostril. Preopercular spine strong, the free portion shorter than the eye-diameter, its distal extremity curved upward, its upper border with 5 strong teeth graduated upwards from the base ; a short stout antrorse spine at the base below. Occiput rather weakly ridged and pitted, smooth to the touch. Lateral line curved downward anteriorly, straight from above the pectoral fin ; nuchal branch straight and inconspicuous ; cephalic extension curved downward to the upper angle of the preopercle, where it bifurcates, the anterior branch entering the postero-inferior angle of the orbit, the hinder branch descending vertically to the base of the preopercular spine, and throwing off a short ramule across the opercle.

Origin of spinous dorsal midway between the soft dorsal and the gill-opening ; spinous dorsal low, none of the spines filamentous, the first the longest, not extending backward beyond the base of the fin, which is subequal to the free interdorsal space ; last spine short, with fully developed membrane. Soft dorsal moderate, the rays simple except the last, increasing in length to the fourth, beyond which they decrease by a feeble gradation to the seventh, whence they rise to the last, which equals the fourth but does not reach to the caudal ; base of soft dorsal less than its distance from the eye. Caudal rounded. Anal originating below the third dorsal ray and terminating well behind that fin, the rays simple or feebly branched at the extremities, similar to but lower and a little shorter than the soft dorsal, its base 1·85 in its distance from the tip of the mandible ; last ray extending to the base of the caudal. Pectoral fin cuneate, inserted below the anterior dorsal spines, all the rays except the first divided, the seventh and eighth longest, reaching to below the fifth dorsal ray. Ventral rays profusely branched, the fourth and fifth equal and longest, extending to the vent.

Gill-openings superior, small and slit-like, far in advance of the spinous dorsal, as far apart as the length of the snout, and nearer to the eye than to the pectoral or dorsal fins.

Upper surface of body plumbeous, profusely spotted and vermiculated with gray; lower surface white. Occiput darker than the body and more sparsely spotted; snout, interorbit, and sides of head gray with numerous darker spots and bars; anterior border of eyelid white. Spinous dorsal black; soft dorsal, caudal, and pectorals lavender, the rays with alternate darker and lighter bars; anal white, except the last ray, which is mesially dusky; ventrals gray, profusely marbled with darker.

Described from a specimen, 125 millim. long, taken in Moreton Bay by Mr. G. T. Bond, and presented by him to the A.F.A.Q. Museum, Cat. No. 1491.

Named for my friend, Captain Donald MacDonald, late first officer of the F.I.S. "Endeavour," and now chief pilot at Keppel Bay, to whom I am indebted for many favours.

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# STUDIES IN AUSTRALIAN LEPIDOPTERA.

A. JEFFERIS TURNER, M.D., F.E.S.

THIS contribution consists of a complete revision of the known Australian species belonging to the three small families URANIADÆ, DREPANIDÆ, and THYRIDIDÆ; of a revision of the Australian genera of the LASIOCAMPIDÆ; and of a number of new genera and species belonging to several families. The last are mostly NOCTUIDÆ belonging to the trifine groups dealt with in vols. iv to ix of Hampson's great work, and PYRALIDÆ, my material in this last family being only half-exhausted when the call came to go to press.

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## FAM. NOCTUIDÆ.

### SUBFAM. AGARISTINÆ.

#### CRURIA EPICHARITA.

[ἐπιχαριτος, pleasing.]

♂. 60 mm. Crown orange; face black, sides and a few hairs above orange. Palpi black; basal joint and inner side of second joint with orange hairs. Antennæ black. Thorax black; apices of tegulæ bright orange. Abdomen black; a basal spot and apices of segments orange; tuft black. Legs black; anterior tibiæ with a few orange hairs. Forewings elongate-triangular, costa almost straight to near apex, apex rounded, termen strongly bowed, oblique; blackish, marked with white blotches, their edges partly suffused with blackish irroration; a quadrangular blotch in distal half of cell; three blotches increasing in size beneath basal portions of veins 4, 3, and 2; two elongate spots separated by a blackish vein beneath  $\frac{2}{3}$  costa; two similar spots before mid-termen, the lower larger; two small bluish-white subapical spots, and a third beneath the last white spot; cilia blackish, around apex white. Hindwings broad, termen rounded;



blackish; the whole central area broadly white, traversed by some blackish veins; cilia blackish. Underside similar.

Type in Coll. Lyell.

N.Q. Cape York; one specimen in February (*Elgner*).

### IDALIMA ÆTHRIAS.

*Argyrolepidia æthrias*, Turn., Tr. R.S.S.A. 1908, p. 55.

*Idalima cyanobasis*, Hmps., Cat. Lep. Phal. ix, p. 460 (1910).

These two genera are closely allied.

N.A. Port Essington, Port Darwin. N.Q. Cape York, Mount Garnet.

### SUBFAM. AGROTINÆ.

### CHLORIDEA ARESCA n. sp.

[ἀρεσκος, pleasing.]

♂. 30-34 mm. Head ochreous-grey. Palpi whitish-ochreous irrorated with rosy-purple. Antennæ ochreous-grey, towards base rosy-purple; ciliations in ♂  $\frac{1}{3}$ . Thorax ochreous-grey; beneath rosy-purple. Abdomen ochreous-grey; beneath irrorated with rosy-purple. Legs whitish-ochreous irrorated with rosy-purple; anterior and middle tarsi mixed with fuscous also. Forewings elongate-triangular, costa straight, apex round-pointed, termen scarcely oblique, slightly rounded beneath; ochreous-grey; some purplish irroration along costa; a dark-fuscous dot on fold at  $\frac{1}{5}$ ; traces of a reddish dentate line at  $\frac{1}{4}$ ; orbicular represented by a reddish-fuscous ring and central dot, these may be nearly obsolete; reniform conspicuous, dark reddish-fuscous; traces of a reddish median transverse line; postmedian line reddish, very slender, acutely dentate, the outer dentations ending in fuscous dots; traces of a dotted subterminal line; a terminal series of blackish dots; cilia rosy-purple with a fuscous median line. Hindwings with termen slightly sinuate; pale-ochreous; a broad dark-fuscous terminal band narrowing towards apex and tornus, with some rosy-purple irroration on termen; cilia pale-ochreous mixed with rosy-purple, apices whitish. Underside pale-ochreous; a crescentic dark-fuscous discal mark on forewing, but none on hindwing; terminal areas irrorated with rosy-purple, and containing a large dark-fuscous blotch in each wing.

I have four specimens from different localities all closely similar. I think they are distinct from any of the numerous varieties of *C. obsoleta*, Fab. The best points of distinction are the acutely dentate postmedian line on forewings, the ochreous hindwings, and the extensive rosy-purple suffusion on underside.

Type in Coll. Turner.

Q. Brisbane, Toowoomba, Dalby. N.S.W. Sydney.

### CANTHYLIDIA RHODOPOLIA.

[*ῥοδοπολιος*, rosy-grey.]

♀. 30-32 mm. Head, antennæ, and thorax pale ochreous-grey. Palpi whitish, apices ochreous-grey. Abdomen pale ochreous-grey. Legs ochreous-whitish with some rosy suffusion, especially on middle tibiæ. Forewings triangular, costa straight, apex round-pointed, termen slightly oblique, rounded at tornus; whitish-ochreous with suffused rosy streaks between veins, and more or less general rosy irroration, leaving a clearer median streak; cilia whitish with a pale-grey median line. Hindwings with termen sinuate and slightly crenulate; pale-grey becoming whitish towards dorsum and base; cilia whitish, with a grey median line at apex. Underside whitish; forewings with fuscous suffusion in disc and rosy suffusion near apex.

Allied to *C. eodora*, Meyr., and *C. ionola*, Swin. From the former it may be distinguished by the absence of whitish streaks on costa and veins; from the latter by its largest size and streaky coloration.

Type in Coll. Turner.

N.A. Port Darwin, in February and March; three specimens received from Mr. F. P. Dodd.

### CANTHYLIDIA FERRUGINOSA n. sp.

[*Ferruginosus*, rusty.]

♀. 25 mm. Head, palpi, antennæ, and thorax ferruginous-brown. Abdomen similar but paler. Leg ferruginous-brown. Forewings triangular, costa slightly arched, apex round-pointed, termen bowed, oblique; whitish with general bright ferruginous suffusion, which is patchy in places, and forms three suffused spots, first beneath cell, second in outer end of cell, third just beyond cell; cilia brown-whitish. Hindwings with termen sinuate; ochreous-whitish, towards

termen suffused with fuscous; veins tinged with ochreous; cilia ochreous-whitish. Underside pale ochreous; disc of forewing suffused with pale-fuscous, and with a round median discal fuscous spot.


Type in Coll. Turner.

N.A. Port Darwin, in February; one specimen received from Mr. F. P. Dodd.

#### SUBFAM. HADENINÆ.

#### CHABUATA DENTOSA n. sp.

[*Dentusus*, toothed.]

♀. 34 mm. Head, palpi, antennæ, thorax, and abdomen whitish faintly tinged with brownish. Legs whitish. Forewings elongate, costa nearly straight, apex round-pointed, termen obliquely rounded; brown-whitish with some brownish suffusion; veins faintly whitish; a fine short dark-fuscous median streak from base; an irregular whitish mark in cell outlined with brownish; lines dark-fuscous, slender, strongly and sharply dentate; first at about  $\frac{1}{3}$ , obsolete towards costa; second from  $\frac{3}{5}$  costa obliquely outwards, then strongly dentate on veins, ending on mid-dorsum, where it joins first line; the two lines are also joined by a streak above dorsum to form a double V shaped figure ; a brownish suffusion between veins towards termen; a terminal series of fuscous dots between veins; cilia brownish, barred with whitish opposite veins. Hindwings with termen slightly sinuate; whitish faintly tinged with brownish; cilia whitish. Underside uniformly whitish.

Type in Coll. Lyell.

N.S.W. Byron Bay, in January; one specimen.

#### CIRPHIS RHODOPSARA n. sp.

[*ῥοδοψαρος*, rosy-grey.]

♂. 33 mm. Head whitish with a few fuscous scales. Palpi whitish mixed with fuscous. Antennæ whitish; ciliations in ♂  $\frac{1}{2}$ . Thorax pinkish-grey. Abdomen whitish; beneath fuscous. Legs whitish tinged with pink; middle and posterior tarsi pale-fuscous; anterior coxæ and femora in ♂ with massive fuscous and pinkish hair-crests. Forewings elongate, costa nearly straight, apex round-pointed, termen scarcely oblique, rounded beneath; pinkish-grey; a slender

ferruginous median streak from base beneath cell; a few scattered fuscous scales, mostly on veins; median vein and all veins towards termen slightly whitish; a series of fuscous dots on veins from  $\frac{2}{3}$  costa obliquely outwards, curved in disc, ending on  $\frac{2}{3}$  dorsum; cilia pinkish-grey. Hindwings with termen sinuate; white; a slender fuscous terminal line; cilia white. Underside whitish, towards costa of forewings suffused with pale fuscous.

This species belongs to the *diatrecta* group.

Type in Coll. Turner.

N.Q. Kuranda, in February; one specimen received from Mr. F. P. Dodd.

### CIRPHIS PORPHYRODES.

[πορφυρωδης, purplish.]

♂. 30 mm. Head, palpi, antennæ, thorax, and abdomen fuscous-whitish; two faint transverse whitish lines on tegulæ; antennal cilia-tions in ♂  $\frac{1}{4}$ ; genital tufts in ♂ large. Legs pale-fuscous; anterior coxæ and femora in ♂ without massive tufts. Forewings elongate, costa nearly straight, apex round-pointed, termen scarcely oblique, rounded beneath; whitish mixed with brownish-fuscous with a purplish tinge; veins whitish; a darker median streak from base beneath cell; a similar streak above dorsum towards base, two fine streaks in cell, and others between veins; a dark-fuscous dot on lower angle of cell; a series of dark-fuscous dots on veins, commencing on  $\frac{2}{3}$  costa, running obliquely outwards, then curved parallel to termen, and ending on  $\frac{2}{3}$  dorsum; a series of dark-fuscous terminal dots between veins; cilia pale-fuscous. Hindwings with termen sinuate; fuscous-whitish, paler towards base, pale-fuscous towards termen; cilia whitish. Underside fuscous-whitish; some fuscous irroration towards costa on both wings; a suffused fuscous transverse line on forewings at  $\frac{3}{4}$ .

According to Hampson's description (Cat. Lep. Phal. v, p. 523) this should be allied to *Cirphis roseilinea*, Wlk., from Borneo, India, and China; but the latter has an ochreous abdomen and ochreous-whitish hindwings.

Type in Coll. Turner.

N.Q. Kuranda, in April; one specimen received from Mr. F. P. Dodd.



**CIRPHIS XANTHOSTICHA** n. sp.

[ξανθοστιχος, yellow-streaked.]

♀. 34 mm. Head, face, palpi, and antennæ whitish-ochreous; palpi with some fuscous scales. Thorax and abdomen whitish-ochreous with a faint pinkish tinge. Legs ochreous-whitish. Forewings elongate-triangular, costa scarcely arched, apex pointed, termen obliquely rounded; pale ochreous-yellow suffused with ochreous-brown; a pale yellowish streak along median vein towards end of cell; veins outlined in whitish-ochreous; a double curved transverse series of fuscous dots beyond cell; a terminal series of blackish dots; cilia concolorous. Hindwings with termen rounded, sinuate beneath apex; whitish suffused with pale-pinkish; some fuscous suffusion towards termen; a terminal series of fuscous dots; cilia whitish. Underside whitish tinged with pinkish, with sparse dark-fuscous irroration towards costa of both wings.

Type in Coll. Lyell.

N.Q. Kuranda, in May; one specimen received from Mr. F. P. Dodd.

## SUBFAM. CUCULLIANÆ.

GEN. **GYROPRORA** nov.

[γυροπρωρα, with rounded prow.]

Frons with a large rounded obtuse conical projection. Tongue present but weakly developed. Palpi rather long, porrect; second joint long, rough-haired beneath. Antennæ of ♂ bipectinated to apex. Thorax and abdomen not crested. Anterior tibiæ without claws; posterior tibiæ with all spurs present. Neuration normal; forewings with areole present.

Not nearly related to any Australian genus.

**GYROPRORA OCHRIAS** n. sp.

[ὠχρος, pale.]

♂. 24 mm. Head and thorax brown-whitish; tegulæ with some dark-fuscous scales. Palpi dark-fuscous; terminal joint and apex of second joint ochreous-whitish. Antennæ brown-whitish; pectinations in ♂ 6. Abdomen ochreous-whitish. Legs ochreous-whitish with some pale-fuscous irroration. Forewings elongate, costa straight or slightly sinuate, apex rounded, termen very

obliquely rounded ; brown-whitish ; markings dark-fuscous ; a short line from costa near base not reaching dorsum ; a line from  $\frac{1}{4}$  costa to  $\frac{2}{3}$  dorsum, with a posterior tooth beneath middle ; orbicular obsolete ; reniform represented by two short whitish transverse streaks with dark-fuscous suffusion between them ; a fine line from  $\frac{2}{3}$  costa obliquely outwards, wavy, bent downwards, then inwards, then downwards again to  $\frac{3}{4}$  dorsum ; a fuscous subterminal shade sharply defined posteriorly ; a well-marked terminal line ; cilia brown-whitish with a pale-fuscous median line. Hindwings with termen rounded, slightly sinuate ; whitish with some brown-whitish irroration ; a faint linear fuscous mark at end of cell ; cilia whitish. Underside whitish, discal marks and sparse irroration pale-fuscous.

Type in Coll. Lyell.

V. Melbourne ; one specimen from Mr. E. Anderson's collection.

#### SUBFAM. ACRONYCTINÆ.

#### **EUPLEXIA EUARMOSTA** n. sp.

[*ευαρμωστος*, harmonious.]

♂. 38 mm. Head and thorax grey mixed with white, the white occurring mostly as fine, bifid, deeply cleft scales. Palpi fuscous ; terminal joint and apex of second joint white. Antennæ fuscous ; in ♂ serrate and shortly ciliated ( $\frac{2}{3}$ ) in tufts. Abdomen grey with white irroration. Legs white ; all tarsi and anterior tibiæ fuscous with white annulations and irroration. Forewings elongate-triangular, costa straight, apex rounded, termen obliquely rounded ; whitish-grey ; a dark-fuscous basal dot ; a dark-fuscous transverse line from costa near base not reaching dorsum ; orbicular elongate-oval, oblique, surrounded by a fuscous blotch, angular in outline with short projections at angles ; this blotch is surrounded by a slight ferruginous suffusion ; reniform pale with faintly ferruginous centre, succeeded by a smaller angular fuscous blotch ; a subterminal series of fuscous ferruginous dots ; cilia fuscous interrupted with whitish opposite veins. Hindwings with termen rounded, slightly wavy ; rather dark-fuscous becoming fuscous-whitish towards base ; cilia white, interrupted with fuscous on mid-termen, and with a fuscous median line between this and

apex. Underside of forewings grey; of hindwings whitish with discal spot and large terminal blotch dark-fuscous.

Type in Coll. Lyell.

V. Melbourne, from Mr. E. Anderson's collection.

### EUPLEXIA ASBOLODES n. sp.

[ἀσβολωδης, sooty.]

♀. 36 mm. [Head rubbed. Antennæ and palpi broken.] Thorax blackish with a few whitish-grey scales. Abdomen fuscous; crests dark-fuscous. Legs fuscous. Forewings elongate, costa slightly arched, apex rounded, termen obliquely rounded, crenulate; blackish with intensely black lines and irroration; orbicular large, 8-shaped, upper segment larger, outlined in black; reniform oval, outlined with black and whitish, with a central ochreous-whitish spot; subterminal line preceded by a diffuse patchy whitish irroration very irregular in form; cilia blackish with a pale basal line. Hindwings with termen gently rounded, crenulate; fuscous; towards base whitish. Underside fuscous; basal half of hindwings whitish with a dark-fuscous discal spot.

The blackish coloration varied by white irroration, which recalls to mind the Geometrid *Melanodes anthracitaria*, Gn., is evidently protective, being adapted to blackened tree-trunks flecked with particles of white ash.

Type in Coll. Lyell.

W.A. Kelmscott, in September; one specimen received from Mr. G. A. Berthoud.

### ARIATHISA OPHIOSEMA n. sp.

[ὀφιοσημος, serpent-marked.]

♂. 32 mm. Head and palpi brownish-fuscous. Antennæ fuscous, towards base whitish; in ♂ moderately ciliated (1) in tufts. Thorax dark-fuscous; tegulæ brownish-fuscous. Abdomen fuscous. Legs fuscous with some whitish irroration. Forewings elongate, costa nearly straight, apex rounded, termen obliquely rounded; fuscous tinged with brownish; lines blackish; a line from base of

costa not reaching dorsum; an irregularly dentate oblique line from  $\frac{1}{3}$  costa to  $\frac{2}{5}$  dorsum; a second line from  $\frac{2}{3}$  costa first outwardly curved then dentate to  $\frac{3}{5}$  dorsum; orbicular represented by a minute white dot; reniform by a vermicular white mark doubly sinuate with extremities sharply bent inwards; a dark subterminal shade sharply defined posteriorly; terminal area brownish with some pale irroration; an interrupted terminal line; cilia grey. Hindwings with termen slightly sinuate; fuscous; cilia whitish with a fuscous basal line. Underside of forewings fuscous; with a suffused whitish line along costa to  $\frac{3}{4}$ , interrupted by a dark-fuscous spot before extremity; of hindwings whitish with a dark-fuscous discal spot and apical blotch.

Type in Coll. Lyell.

### ARIATHISA EBENODES n. sp.

♂. 35 mm. Head and thorax dark-fuscous with some whitish scales. Palpi dark-fuscous mixed with whitish; apices of second and terminal joints mostly whitish. Antennæ dark-fuscous; in ♂ minutely ciliated ( $\frac{1}{4}$ ), with short bristles ( $\frac{1}{3}$ ). Abdomen fuscous. Legs dark-fuscous irrorated and annulated with whitish. Forewings elongate, costa scarcely arched, apex rounded, termen obliquely rounded; dark-fuscous mixed with pale-fuscous; traces of a double dark-fuscous transverse line at  $\frac{1}{4}$ ; orbicular represented by a whitish dot; reniform by an irregular small white mark suffusedly bordered by dark-fuscous; a fine acutely dentate dark-fuscous line from  $\frac{2}{3}$  costa to  $\frac{2}{3}$  dorsum; a dark-fuscous subterminal shade sharply defined and irregularly dentate posteriorly; a fine interrupted dark-fuscous terminal line; cilia fuscous mixed with whitish. Hindwings with termen rounded; fuscous; cilia whitish with a fuscous basal line. Underside of forewings fuscous; a whitish subcostal streak, irrorated with fuscous, to  $\frac{2}{3}$ ; an obscure dark discal dot and postmedian line; of hindwings whitish with fuscous irroration, discal spot and apical blotch.

Type in Coll. Lyell.

W.A. Waroona, in March; one specimen received from Mr. G. F. Berthoud.



**ARIATHISA CELÆNICA** n. sp.

[κελαινικος, dark.]

♀. 24 mm. Head and thorax dark-fuscous with scattered whitish scales, more numerous in head and tegulæ. Palpi whitish, with some dark-fuscous irroration on outer side. Antennæ pale-fuscous. Abdomen ochreous-whitish with scanty fuscous irroration. Legs whitish with scanty fuscous irroration; anterior tibiæ and tarsi dark-fuscous annulated with ochreous-whitish. Forewings elongate-triangular, rather narrow, costa scarcely arched, apex rounded, termen obliquely rounded; dark-fuscous, markings brown-whitish; some very short costal strigulæ; lines blackish, dentate, very fine, and indistinct, preceded and followed by some brown-whitish scales; first at  $\frac{1}{4}$ ; second from  $\frac{3}{5}$  costa very obliquely outwards, then bent and continued to  $\frac{2}{3}$  dorsum; orbicular small, round, and inconspicuous; reniform well developed, consisting of two brown-whitish streaks divided, except at costal end, by a fine dark line, the posterior streak is semilunar and its dorsal extremity is prolonged into a short acuminate process; a fine blackish terminal line; cilia dark-fuscous mixed with brown-whitish. Hindwings with termen scarcely sinuate; whitish; veins, costal, and terminal areas irrorated with pale-fuscous; cilia whitish with a pale-fuscous sub-basal line. Underside of forewings fuscous-whitish; of hindwings whitish with a few pale-fuscous scales.

Type in Coll. Lyell.

V. Sea Lake, in April; one specimen received from Mr. D. Goudie.

**ARIATHISA OCHROPEPLA** n. sp.

[ὠχροπεπλος, with pale coat.]

♂. 26 mm. Head ochreous-whitish with a few fuscous scales on frons. Palpi whitish-ochreous; external surface of first joint and basal  $\frac{2}{3}$  of second joint dark-fuscous. Antennæ ochreous-whitish; ciliations in ♂  $\frac{2}{3}$ . Thorax ochreous-whitish. Abdomen ochreous-whitish with a few scattered pale-fuscous scales. Legs ochreous-whitish. Forewings elongate-triangular, costa nearly straight except at extremities, apex rounded, termen scarcely oblique, rounded beneath; grey-whitish, markings dark-fuscous; a spot at base; traces of a sub-basal line; a dentate line at  $\frac{1}{4}$  interruptedly indicated; a second interrupted dentate line from

$\frac{3}{5}$  costa outwards, then bent in disc, and ending on  $\frac{3}{4}$  dorsum; some dark scales on apical third of costa; a pale subterminal line faintly indicated; orbicular obsolete; reniform outlined by dark scales; a fine interrupted terminal line; cilia grey-whitish. Hindwings with termen slightly sinuate; whitish with slight pale-fuscous suffusion; cilia whitish with a fuscous basal line. Underside whitish suffused and irrorated with fuscous.

Type in Coll. Lyell.

V. Blackrock, near Melbourne, in October; one specimen.

### CALLYNA LEUCOSTICHA n. sp.

[ΛΕΥΚΟΣΤΙΧΟΣ, white-streaked.]

♀. 28 mm. Head whitish with some brownish scales on crown. Palpi dark-fuscous, base, apex of second joint, and base of terminal joint whitish mixed with reddish. Antennæ fuscous. Thorax dark-fuscous mixed with whitish; some reddish scales on shoulders. Abdomen with a small dorsal crest on basal segment only; fuscous. Legs whitish mixed with reddish and annulated with dark-fuscous. Forewings rather broadly triangular, costa gently arched, apex rounded, termen slightly oblique, slightly bowed; dark-fuscous with scattered white and dull-greenish scales; a few reddish scales at base of costa; an ill-defined white streak from base along fold to  $\frac{1}{4}$ ; basal half of disc with much white irroration; first line faintly indicated; orbicular large, dark, quadrangular; reniform obsolete, being indicated by only a fine dark transverse mark; second line from  $\frac{3}{5}$  costa to  $\frac{3}{4}$  dorsum, not dentate, forming a rounded sigmoid curve, edged posteriorly with some whitish scales; a dark subterminal shade, its posterior edge irregularly dentate, and connected with termen above middle; terminal area above and below this connection with much white irroration; a terminal series of dark-fuscous spots; cilia dark-fuscous mixed with whitish. Hindwings with termen rounded, slightly wavy; fuscous; cilia fuscous, apices whitish. Underside fuscous with whitish and reddish irroration especially on hindwings; hindwings with indistinct dark discal spot and subterminal line.

Type in Coll. Lyell.

N.Q. Cape York, in March; one specimen (*Elgner*).

The following species are not recorded from Australia in Hampson's Cat. Lep. Phal.:—

MAGUSA OLIVARIA.

N.Q. Kuranda, in May; one specimen in Coll. Lyell received from Mr. F. P. Dodd.

PERIGEA DOLOSA.

N.Q. Cairns, Geraldton. Q. Brisbane.

CRANIOPHORA FASCIATA.

N.Q. Kuranda. Q. Brisbane.

ERIOPIUS TRILINEATA.

I formerly ascribed this species to Australia, but in error.

ERIOPIUS MAILLARDI.

N.Q. Townsville.

CHASMINA TENUILINEA.

N.A. Port Darwin, in February and December; several specimens received from Mr. F. P. Dodd.

CALLYNA MONOLEUCA.

N.Q. Townsville, in February and April; two specimens received from Mr. F. P. Dodd.

ZALISSA CATOCALINA.

Q. Brisbane, in January, February, and March. The West Australian locality is an error. *Z. pratti*, Bak., is only a variety of this species.

FAM. URANIADÆ.

SUBFAM. URANIANÆ.

I know nine Australian species belonging to six genera. The last three genera in the tabulation are closely allied, the differences in neuration, which are remarkable, being confined to the male sex.

- |   |     |     |     |             |
|---|-----|-----|-----|-------------|
| 1. Forewings with veins 10 and 11 absent  | ... | ... | ... | 2.          |
| Forewings with 10 and 11 present  | ... | ... | ... | 3.          |
| 2. Hindwings with a long tail traversed by veins 3 and 4,<br>and a shorter tail on vein 6 | ... | ... | ... | Nyctalemon. |
| Hindwings with one short tail traversed by vein 4 only                                    | ... | ... | ... | Alcidis.    |

- |  |     |     |     |                      |
|--|-----|-----|-----|----------------------|
| 3. Both wings with 3 and 4 long-stalked  | ... | ... | ... | <b>Urapteroides.</b> |
| Both wings with 3 and 4 connate or separate  | ... | ... | ... | <b>4.</b>            |
| 4. Palpi moderately long (1) with long terminal joint; forewing in ♂ with 6 and 7 separate | ... | ... | ... | <b>Micronia.</b>     |
| Palpi short and slender with short terminal joint; forewing in ♂ with 6 and 7 stalked      | ... | ... | ... | <b>5.</b>            |
| 5. Forewing in ♂ with 2 and 3 stalked  | ... | ... | ... | <b>Acropteris.</b>   |
| Forewing in ♂ with 2 and 3 widely separate   | ... | ... | ... | <b>Aploschema.</b>   |

## GEN. NYCTALEMON.

*Nyctalemon*, Dalman, Act. Holm. 1824, p. 407; Hmps., Moths Ind. iii, p. 111.

## NYCTALEMON PATROCLUS.

*Papilio patroclus*, Linn., Syst. Nat. i, 2, p. 749.

*Nyctalemon patroclus*, Hmps., Moths Ind. iii, p. 111.

A widely distributed species forming several slightly different local races.

N.Q. Cape York, 2. Cairns. Also from the Archipelago, China, and India.

## GEN. ALCIDIS.

*Alcidis*, Hb., Verz. p. 289.

Closely related to the Indian genus *Nyctalemon*, which differs in having a long tail traversed by veins 3 and 4 of the hindwing, and a shorter tail on vein 6.

## ALCIDIS ZODIACA.

*Zodiaca*, Butl.

This handsome dayflying species is gregarious in its habits, and occurs abundantly in the coastal scrubs of North Queensland. There is a closely allied form in New Guinea, of which it might be regarded as a subspecies.

## GEN. URAPTEROIDES.

*Urapteroides*, Moore, Lep. Atk. p. 258; Hmps., Moths Ind. iii, p. 112.

Palpi moderate; terminal joint short. Forewings with 3 and 4 stalked, 6 and 7 stalked, 8 and 9 stalked, 11 free or anastomosing with 12. Hindwings with a short tail on vein 4; 3 and 4 stalked, 6 and 7 connate.



**URAPTEROIDES ASTHENIATA.**

*Micronia astheniata*, Gn., Lep. x, p. 24.

*Urapteroides astheniata*, Hmps., Moths Ind. iii, p. 113.

The sexes differ according to the single example of each before me. The ♀ resembles Hampson's figure. The ♂ has only two fasciæ on forewings as against 5 in ♀, the two basal and the subterminal being absent; and only one on hindwings, the subterminal fascia being absent, and the terminal line becoming much broader and submarginal.

N.Q. Cape York, 2, 4. Also from Borneo, Malay Peninsula, Ceylon, and India.

**GEN. MICRONIA.**

*Micronia*, Gn., Lep. x, p. 22; Hmps., Moths Ind. iii, p. 117.

Palpi moderately long with elongate terminal joint. Forewing of ♂ with 2 and 3 arising by a common stalk from near base of median vein, 6 and 7 separate; in ♀ 2 from median beyond middle, 3 and 4 connate from lower angle of cell, 6 and 7 stalked; in both sexes 8, 9, 10 stalked, 11 free. Hindwings with 3 and 4 connate, 6 and 7 separate. Middle tibiæ in ♂ with long hairs on dorsal surface. Posterior tibiæ in ♂ smooth, with outer median spur absent.

**MICRONIA JUSTARIA.**

*Micronia justaria*, Wlk., Cat. Brit. Mus. xxiii, p. 821.

N.A. Port Darwin, 1, 5. N.Q. Thursday Island; Cape York; Cairns; Kuranda, 3, 4, 5; Geraldton; Dunk Island. Also from New Guinea.

**GEN. ACROPTERIS.**

*Acroptervis*, Hb., Zutr. iv, p. 36; Hmps., Moths Ind. iii, p. 114.

Palpi slender, short; terminal joint short. Forewings in ♂ with 2 and 3 stalked from median near base or about middle; in ♀ 2 and 3 connate or closely approximated from lower angle of cell; in both sexes 6 and 7 stalked, 8, 9, 10 stalked, 11 free. Hindwings with 3 and 4 connate or short-stalked, 6 and 7 connate or separate. Middle tibiæ of ♂ with long hairs on dorsal surface. Hind tibiæ of ♂ smooth, with outer median spur absent.

**ACROPTERIS STRIATARIA.**

*Geometra striataria*, Clerck, Icon. Ins. Pl. 55, f. 4.

*Anteia canescens*, Luc., P.L.S., N.S.W., 1891, p. 300.

*Acropteris striataria*, Hmps., Moths Ind. iii, p. 115.

N.A. Port Darwin, 1, 2, 10. N.Q. Cape York, 2; Kuranda, 4, 10; Townsville. Q. Rockhampton; Brisbane, 3; Rosewood, 3. Also from Java and India.

**ACROPTERIS QUADRIPUNCTATA.**

*Stesichora quadripunctata*, Warr., Nov. Zool. 1896, p. 274.

N.Q. Kuranda, 1, 4, 5, 12. Also from Louisiades and New Guinea.

**ACROPTERIS CADAVEROSA.**

*Anteia cadaverosa*, Luc. P.R.S.Q. 1901, p. 80.

My single example, which agrees fairly well with Dr. Lucas's description, is a ♀, and therefore the genus requires verification.

N.Q. Chillagoe, 3. The "Lucas-Rye Bellenden-Ker Expedition" is a myth.

**ACROPTERIS NANULA.**

*Micronia nanula*, Warr., Nov. Zool. 1898, p. 226.

Q. Westwood; Rosewood, 3; Killarney, 10.

**GEN. APLOSCHEMA.**

*Aploschema*, Warr., Nov. Zool. 1897, p. 22.

Palpi minute. Neuration alike in both sexes. Forewings with 2, 3, and 4 widely separate at origin, 6 and 7 stalked, 8, 9, 10 stalked, 11 free. Hindwings with 3 and 4 widely separate, 6 and 7 connate or separate. Middle tibiae of ♂ with a tuft of long hairs on dorsal surface. Hind tibiae of ♂ smooth with outer median spur obsolete.

This genus differs from *Pseudomicronia*, Moore (Hmps., Moths Ind. iii, p. 116) in the wide separation of veins 2 and 3 of the forewings. Warren's type is *angulataria*, Fab., and as I have not examined this species I cannot be absolutely sure that I have applied the name correctly.

## APLOSHEMA DISCATA.

*Micronia discata*, Warr., Nov. Zool. 1899, p. 319.

*Anteia doddsiana*, Luc., P.R.S.Q. 1899, p. 149.

Q. Brisbane; Toowoomba.

## SUBFAM. EPIPLEMINÆ.

This subfamily differs from the Uranianæ in the presence of a frenulum. The retinaculum in the ♂ is usually bar-shaped. The Australian genera are all closely related; the neurulation shows little variation, and the distinguishing points are mostly in the form of the hindwings, which in the first five genera differs much in the two sexes. The species are small, inconspicuous, and often closely similar. A large number have been described by Mr. Warren from the Papuan region, and it is quite likely that some here described as new may prove to be synonyms. There are twenty-four Australian species known at present, one of which I have not examined, but no doubt many more will be discovered within the tropical and sub-tropical zone.

- |  |                     |
|--|---------------------|
| 1. ♂ with dorsal area of hindwing more or less distorted or undeveloped ... ..   | 2.                  |
| Hindwings alike in both sexes ... ..   | 6.                  |
| 2. Dorsal area of hindwing in ♂ forming a glandular pocket ... ..  | 3.                  |
| Dorsal area of hindwing in ♂ not forming a glandular pocket ... ..   | 4.                  |
| 3. Hindwings in both sexes with a strong tooth on vein 7 only; in ♂ with veins 2, 3, and 4 lost in pocket ...                    | <b>Acachmena.</b>   |
| Hindwings in ♂ rounded or slightly angled on vein 7, veins 2 and 3 lost in pocket; in ♀ with small teeth on veins 4 and 7 ... .. | <b>Balantiucha.</b> |
| 4. Forewings with 8, 9, 10 stalked; hindwings in ♀ with 3 and 4 stalked ... ..   | <b>Monobolodes.</b> |
| Forewing with 10 free; hindwings with 3 and 4 not stalked ... ..   | 5.                  |
| 5. Hindwings of ♂ with sub-dorsal groove on upper surface smooth and without fovea; of ♀ with small teeth on 4 and 7 ... ..      | <b>Dirades.</b>     |
| Hindwings of ♂ with a small fovea and ridge of hairs in sub-dorsal groove; of ♀ toothed on 4 only ... ..                         | <b>Lobogethes.</b>  |
| 6. Hindwings rhombiform ... ..   | 7.                  |
| Hindwings not rhombiform ... ..  | 8.                  |

- |   |     |     |     |     |     |              |
|---|-----|-----|-----|-----|-----|--------------|
| 7. Forewings with termen dentate ; hindwings with 3 and 4 stalked                               | ... | ... | ... | ... | ... | Dysrhombia.  |
| Forewings not dentate ; hindwings with 6 and 7 stalked  |     |     |     |     |     | Rhombophylla |
| 8. ♂ with large tufts of hair on terminal segment of abdomen, and on posterior femora and tibiæ | ... |     |     |     |     | Chætopyga.   |
| ♂ without tufts on abdomen and hindlegs   | ... | ... |     |     |     | 9.           |
| 9. ♂ antennæ bipectinated, the pectinations well separate, the outer row longer                 | ... | ... | ... | ... |     | Dysæthria.   |
| ♂ antennæ with the pectinations closely appressed   | ... |     |     |     |     | 10.          |
| 10. Both sexes with a large fovea on base of forewing   | ... |     |     |     |     | Chundana.    |
| Forewings without fovea   | ... | ... | ... | ... |     | Epiplema.    |

## GEN. ACACHMENA nov.

[ἀκαχμενος, sharp-pointed.]

Tongue present. Palpi moderate (about 1), porrect; second joint rather stout. Antennæ in ♂ unipectinate, with closely appressed pectinations. Forewings with 5 from slightly above middle of cell, 6 and 7 short-stalked, 8 and 9 stalked. Hindwings with a prominent tooth on vein 7, exaggerated in ♀; costa excavated in middle, with a subapical tuft; dorsal area rolled over to form a glandular pocket in ♂, veins 2, 3, and 4 lost in pocket; in ♀ 3 and 4 connate; in both sexes 6 and 7 connate, 8 widely separate from cell.

## ACACHMENA EUTHYSTICHA n. sp.

[εὐθυστιχος, straight-lined.]

♂ ♀. 22-24 mm. Head and antennæ dark-grey; face and palpi dark-fuscous. Thorax grey. Abdomen grey or whitish-grey; in ♀ with four rows of fuscous dots. Legs grey; anterior pair fuscous. Forewings triangular, costa slightly arched, apex rounded, termen nearly straight, oblique; grey with fuscous irroration, in ♂ tinged with ferruginous; a median darker band, tinged with ferruginous, its anterior edge concave, posterior edge straight and well-defined, from  $\frac{3}{4}$  costa to  $\frac{3}{4}$  dorsum; a dark streak from costa before apex; a grey or ferruginous terminal line, sometimes containing some dark-fuscous dots; cilia grey, apices interruptedly whitish. Hindwings coloured as forewings; median band reduced to a row of ferruginous-grey dots.

Type ♂ in Coll. Lyell; ♀ type in Coll. Turner.

N.Q. Kuranda, in February, May, and October; three specimens received from Mr. F. P. Dodd, of which two are in Coll. Lyell.



## GEN. BALANTIUCHA nov.

[βαλαντιουχος, having a pocket.]

Tongue present. Palpi short (not exceeding 1), slender, smooth-scaled, porrect. Antennæ of ♂ with broad, unipectinate, closely appressed pectinations. Forewings with 5 from slightly below upper angle of cell, 6 and 7 stalked, 8 and 9 stalked, 11 free, sometimes approximated on a point with 12. Hindwings in ♂ rounded, with dorsal area rolled over to form a glandular pocket, veins 2 and 3 lost in pocket; in ♀ with small terminal teeth on veins 4 and 7; 3 and 4 connate, 6 and 7 connate, 8 in both sexes widely separate from cell.

Possibly 11 and 12 may sometimes anastomose.

Type *Dirades platyphylla*, Turn.

## BALANTIUCHA PLATYPHYLLA.

*Dirades platyphylla*, Turn., Tr. R.S.S.A. 1903, p. 21.

N.Q. Kuranda, 2; Q. Brisbane, 2, 3, 4. The locality Thursday Island was an error based on misidentification.

## BALANTIUCHA MICROTHYRIS n. sp.

[μικροθυρίς, with a small window.]

♂ ♀. 21-26 mm. Head and face dark-grey; fillet broadly white. Palpi dark-grey; inner surface of second joint whitish. Antennæ grey. Thorax and antennæ grey. Legs whitish-ochreous; anterior pair grey. Forewings triangular, costa nearly straight, apex rounded, termen nearly straight, oblique; in ♂ with a triangular fovea near base above internal vein; whitish-grey finely strigulated with darker grey; a semicircular fuscous blotch on dorsum beyond middle, better marked in ♂; two ochreous-grey lines from costa at  $\frac{1}{2}$  and  $\frac{3}{4}$ , the anterior obliquely outwards, the posterior outwardly curved, both lost in mid-disc; a submarginal series of fine fuscous annules, more or less edged with whitish; cilia whitish-grey. Hindwings coloured as forewings, with a broad median darker fascia best marked in ♀.

This species might be readily confused with the preceding if it were not for the fovea on forewing of ♂. It might be the same

as *Dirades annulifera*, Warr. (Nov. Zool. 1896, p. 274), but in the description of this no fovea is mentioned.

Type in Coll. Turner.

N.Q. Thursday Island; several specimens all in poor condition. Kuranda, 11, 12; three specimens smaller and paler than those from the former locality.

### BALANTIUCHA MUTANS.

*Erosia mutans*, Butl., A.M.N.H. (5) xix, p. 434 (1887).

*Dirades leucocera*, Hmps., Ill. Het. viii, p. 102, Pl. 150, f. 13; Moths Ind. iii, p. 133.

The strong subapical tuft on costa of hindwings is found in both sexes.

N.Q. Thursday Island; Cairns; Kuranda, 4; Townsville, 3. Also from Ceylon and India.

### BALANTIUCHA SEMINIGRA.

*Dirades seminigra*, Warr., Nov. Zool. 1896, p. 346.

Closely allied to the preceding but much darker, and with the antemedian line of hindwings obsolete.

N.Q. Cooktown; Kuranda, 3, 4, 5, 6, 10.

### BALANTIUCHA DECORATA.

*Dirades decorata*, Warr., Nov. Zool. 1898, p. 228.

Easily recognised by the triangular snow-white blotch on costa of hindwing.

N.Q. Kuranda, 4; Townsville, 2, 4. Q. Duaringa, 3; Brisbane, 4, 12; Mt. Tambourine, 11.

### GEN. DIRADES.

*Dirades*, Wlk., Brit. Mus. Cat. xxxv, p. 1650; Hmps., Moths Ind. iii, p. 132.

Differs from the preceding in the hindwings of ♂ not forming a glandular pocket, veins 2 and 3 visible. In the ♂ there is a naked groove on upper surface of hindwings within dorsal margin, termen is excavated in middle but not toothed; in ♀ termen is slightly toothed on veins 4 and 7; vein 11 of forewings may be free or strongly anastomosing with 12.

Type *theclata*, Gn., from India and Africa.

## DIRADES LEUCOCEPHALA.

*Erosia leucocephala*, Wlk., Brit. Mus. Cat. xxvi, p. 1758.

*Epiplema lugens*, Warr., Nov. Zool. 1897, p. 202.

N.Q. Geraldton; Townsville, 3. Q. Rockhampton; Brisbane, 8.

## GEN. LOBOGETHES.

*Lobogethes*, Warr., Nov. Zool. 1896, p. 351.

Near the preceding genera. Both wings in the rest position are folded fanwise, the forewings extended obliquely forwards, the hindwings appressed to abdomen. On the upperside of hindwings within the dorsal margin is a groove, which in the ♂ contains a ridge of long hairs and a small elongate fovea on its outer slope near base. In the ♂ the termen of hindwings is excised below vein 6; in the ♀ with a tooth on vein 4 only. In the forewing 11 anastomoses strongly with 12.

Type *Lobogethes interrupta*, Warr.

## LOBOGETHES INTERRUPTA.

*Lobogethes interrupta*, Warr., Nov. Zool. 1896, p. 352.

*Gathynia despecta*, Warr., Nov. Zool. 1898, p. 229.

*Erosia radiata*, Luc., P.R.S.Q. 1898, p. 17.

N.Q. Kuranda, 5; Townsville, 1, 2. Q. Duaringa; Brisbane, 1, 2, 4; Rosewood, 3; Warwick, 10. N.S.W. Glen Innes, 10.

## GEN. MONOBOLODES.

*Monobolodes*, Warr., Nov. Zool. 1898, p. 229.

Tongue present. Palpi rather short, porrect. Antennæ in ♂ unipectinate, the pectinations broad, rather closely appressed. Forewings with 5 from well below angle of cell, 6 and 7 stalked, 8 and 9 stalked, and 10 shortly stalked with them, 11 free. Hindwings with termen toothed on vein 7 only in ♂, dentate with a more prominent tooth on vein 7 in ♀; dorsal area in ♂ partly aborted, grooved on upper surface, vein 2 not visible; in ♀ with 3 and 4 stalked.

Type *M. subfalcata*, Warr.

**MONOBOLODES SUBFALCATA.**

*Monobolodes subfalcata*, Warr., Nov. Zool. 1898, p. 230.

N.A. Port Darwin, 11, 12. N.Q. Kuranda, 10, 11; Townsville, 3, 4. Q. Duaringa, 9.

**GEN. DYSRHOMBIA.**

*Dysrhombia*, Warr., Nov. Zool. 1896, p. 346.

Tongue present. Palpi short, porrect. Antennæ in ♂ unipectinate, the pectinations broad, rather closely appressed. Forewings sharply dentate; 5 from near upper angle of cell, 6 and 7 stalked, 8 and 9 stalked, 11 free. Hindwings alike in both sexes, rhombiform, costa with sub-basal and apical tufts, termen strongly produced, with an acute tooth on vein 4; 3 and 4 stalked, 6 and 7 connate.

Type *D. longipennis*, Warr.

**DYSRHOMBIA LONGIPENNIS.**

*Dysrhombia longipennis*, Warr., Nov. Zool. 1896, p. 347.

N.Q. Cooktown; Kuranda, 10, 11, 12.

**GEN. RHOMBOPHYLLA, nov.**

[ῥομβοφυλλος, with rhombiform wings.]

Tongue present. Palpi moderate, slender, porrect. Forewings with termen sinuate, not dentate; 5 from near upper angle of cell, 6 and 7 stalked, 8 and 9 stalked, 11 free. Hindwings rhombiform, produced on vein 3 into a tooth which is slightly hooked inwards; 3 and 4 connate, 6 and 7 short-stalked.

Type *Epiptema xylinopis*, Turn.

**RHOMBOPHYLLA XYLINOPIS.**

*Epiptema xylinopis*, Turn., Tr. R.S.S.A. 1903, p. 20.

N.Q. Townsville, 4.

**GEN. CHÆTOPYGA.**

*Chætopyga*, Warr., Nov. Zool. 1896, p. 344.



## † CHÆTOPYGA HORRIDA.

*Chætopyga horrida*, Warr., Nov. Zool. 1896, p. 345.

N.Q. Mackay.

GEN. DYSÆTHRIA nov.

[δυσαιθριος, dusky.]

Tongue present. Palpi moderate, slender, porrect. Antennæ in ♂ bipectinated, the inner row short, the outer long, slender, widely separated. Forewings with 5 from near upper angle of cell, 6 and 7 stalked, 8 and 9 stalked, 11 free. Hindwings with termen slightly toothed on veins 4 and 7; 3 and 4 connate, 6 and 7 connate.

The antennal structure is interesting as explaining that of allied genera, which is at first sight difficult to understand.

DYSÆTHRIA PASTEOPA n. sp.

[παστεωπος, sprinkled, irrorated.]

♂. 23 mm. Head pale-grey; fillet whitish; face and palpi fuscous. Antennæ ochreous-whitish; pectinations in ♂ inner row  $3\frac{1}{2}$ , outer row  $\frac{2}{3}$ . Thorax and abdomen pale-grey. Legs ochreous-whitish; anterior pair mixed with fuscous. Forewings triangular, costa moderately arched, apex rounded, termen rounded, oblique; pale-grey sparsely irrorated with dark-fuscous, a slight brownish irroration representing antemedian and postmedian lines; cilia pale-grey. Hindwings with termen slightly dentate on veins 4 and 7, as forewings.

Type in Coll. Turner.

Q. Rosewood, in March; one specimen.

GEN. CHUNDANA.

*Chundana*, Wlk., J. Linn. Soc. Zool. 1862, p. 116.*Paradirades*, Warr., Nov. Zool. 1896, p. 353.

CHUNDANA LUGUBRIS.

*Chundana lugubris*, Wlk., J. Linn. Soc. Zool. 1862, p. 117.*Paradirades assimilis*, Warr., Nov. Zool. 1896, p. 353.

I owe this identification to Sir Geo. Hampson. Walker referred this species to the Lithosiadæ!

N.Q. Cooktown; Kuranda, 2, 3, 5, 8. Also from New Guinea and Borneo.

## GEN. EPIPLEMA.

*Epiplema*, H-Sch., Ausser. Schmet., p. 26; Hmps., Moths Ind. iii, p. 125.

Tongue present. Palpi slender, smooth-scaled, porrect, moderate or rather long (1 to 2). Antennæ of ♂ with broad closely appressed dentations. Forewings with 5 from upper angle of cell, 6 and 7 stalked, 8 and 9 stalked, 11 free. Hindwings alike in both sexes; termen toothed opposite veins 4 and 7; 3 and 4 connate, 6 and 7 connate, 5 present but weakly developed, 4 and 6 approximating towards termen.

## EPIPLEMA INSTABILATA.

*Epiplema instabilata*, Wlk., Cat. Brit. Mus. xxxv, p. 1646; Hmps., Moths Ind. iii, p. 131.

Easily recognised by the broadly white dorsum of forewings and costa of hindwings.

N.Q. Thursday Island; Cairns; Kuranda, 4, 5, 7; Geraldton; Townsville, 5. Also from the Archipelago, China, Ceylon, and India.

## EPIPLEMA CONFLICTARIA.

*Erosia conflictaria*, Wlk., Brit. Mus. Cat. xxiii, p. 851.

*Epiplema conflictaria*, Hmps., Moths Ind. iii, p. 129.

N.Q. Cairns; Kuranda, 3, 4, 5, 6, 7, 11; Geraldton, 11; Townsville, 12. Also from the Archipelago, Ceylon, and India.

## EPIPLEMA QUADRISTRIGATA.

*Epiplema quadristrigata*, Wlk., Cat. Brit. Mus. xxxv, p. 1647; Hmps., Moths Ind. iii, p. 128.

*Epiplema oxytypa*, Turn., Tr. R.S.S.A. 1903, p. 19.

Q. Brisbane. Also from Ceylon.

## EPIPLEMA STEREOGRAMMA.

*Dirades stereogramma*, Turn., Tr. R.S.S.A. 1903, p. 22.

N.Q. Kuranda, 4; Townsville, 3.

**EPIPLEMA LEUCOSEMA** n. sp.

[λευκοσημος, white-marked.]

♀. 15 mm. Head and palpi brown-whitish mixed with dark-brown. Antennæ whitish, on upper surface finely barred with dark-fuscous. Thorax and abdomen brown mixed with whitish. Legs whitish obscurely annulated with pale-fuscous. Forewings triangular, costa moderately arched, apex rounded, termen rounded, oblique; brown mixed with whitish and transversely strigulated with dark-fuscous; postmedian line from  $\frac{3}{5}$  costa to  $\frac{3}{5}$  dorsum, sharply angulated outwards in disc forming a strong projecting tooth; an irregular fuscous-brown terminal band; cilia whitish mixed with fuscous-brown. Hindwings with termen sharply dentate on veins 4 and 7; colour as forewings; an elongate median basal white streak bent towards costa at extremity; a double postmedian line, even more strongly toothed than in forewing; a crenated whitish subterminal line, edged externally with dark-fuscous; cilia brownish.

Type in Coll. Turner.

N.Q. Kuranda, in March; one specimen received from Mr. F. P. Dodd.

**EPIPLEMA THIOCOSMA** n. sp.

[θειοκοσμος, decorated with sulphur.]

♂ ♀. 19-20 mm. Head and antennæ whitish-grey; face and palpi dark-fuscous. Thorax and abdomen grey. Legs ochreous-whitish; anterior pair fuscous. Forewings triangular, costa gently arched, apex rounded, termen sinuate, being slightly excavated beneath apex and above tornus, projecting in middle; grey; in ♀ suffused with whitish-ochreous; markings ferruginous-fuscous; two dots in disc representing antemedian line; a median discal dot; a postmedian line, more strongly marked in ♀, from  $\frac{2}{3}$  costa obliquely outwards, angled in disc, and continued to  $\frac{3}{4}$  dorsum; a subterminal line obsolete towards tornus; cilia whitish-ochreous mixed with fuscous. Hindwings with small acute teeth on veins 4 and 7; fuscous-grey; in ♂ with a dark-fuscous basal spot, and an irregular area, especially towards costa, pale-yellow; a fine pale-yellow postmedian line with a strong angular median projection; in ♀ the wing is uniformly dark-grey with the exception of a small yellowish suffusion towards base of dorsum, and a triangular white dot near

termen about middle; some dark subterminal lunules; cilia in ♂ pale-yellow, interrupted by dark-grey between teeth, in ♀ dark-grey.

Types ♂ and ♀ in Coll. Lyell.

N.Q. Kuranda, in March, April, May, and November; four specimens received from Mr. F. P. Dodd.

### EPIPLEMA SCHEMATICA n. sp.

[σχηματικός, formal, precise.]

♀. 22-24 mm. Head, antennæ, thorax, and abdomen grey-whitish. Face and palpi dark-fuscous. Legs pale-fuscous; posterior pair ochreous-whitish. Forewings triangular, costa nearly straight for  $\frac{2}{3}$ , then rather strongly arched, apex pointed, termen with a rounded projection between veins 6 and 7 and another between 3 and 4, excavated between projections; pale brownish-grey; more or less strigulated with fuscous; antemedian line obsolete; postmedian line fine brownish-fuscous, from  $\frac{2}{3}$  costa indented in disc, thickened at ending on  $\frac{4}{5}$  dorsum; a brownish-fuscous spot on termen at excavation; cilia brownish-fuscous. Hindwings with termen dentate on veins 4 and 7; colour as forewings but slightly darker; a fine transverse line near base; three brownish-fuscous elongate dots at mid-disc; postmedian line at  $\frac{4}{5}$ , edged posteriorly by a pale line, obtusely angled below middle; some dark lunules opposite central part of termen.

Type in Coll. Turner.

N.Q. Kuranda, in March and September; three specimens received from Mr. F. P. Dodd.

### EPIPLEMA CÆRULEOTINCTA.

*Cæruleotincta*, Warr.

N.Q. Kuranda, 3; Townsville, 4.

### EPIPLEMA ARGILLODES.

*Epiplema argillodes*, Turn., Tr. R.S.S.A. 1903, p. 19.

Q. Gympie; Brisbane.



## FAM. LASIOCAMPIDÆ.

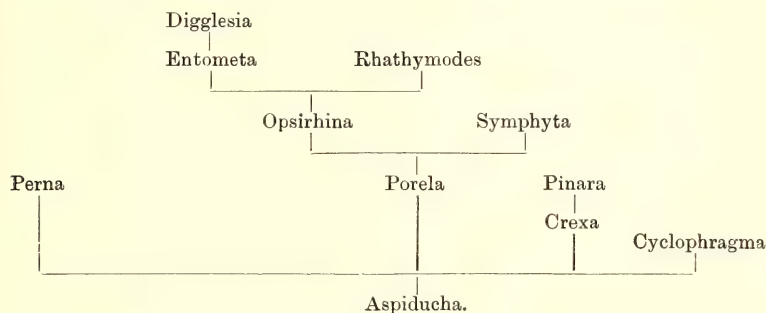
Moths usually of rather large size and heavy build, with thorax, abdomen, and legs densely hairy. Tongue absent. Palpi well developed, often long, with dense hairs. Antennæ pectinated to apex in both sexes. Forewings with 1c absent, 1a and 1b coincident (not furcate at base), 5 approximated at origin to 4, 6 and 7 connate or stalked from upper angle of cell, 9 and 10 stalked. Hindwings with frenulum and retinaculum obsolete; a strong costal expansion at base; 1c absent, 7 from costal edge of cell, 8 closely approximated or anastomosing with 7, or with cell, or connected by a bar with 7, so forming a precostal cell, usually with one or more costal veinlets running from precostal cell into basal costal expansion.

Though not of very high organisation, this family is specialised in several respects, so as to be sharply defined and easily recognised. The peculiarities in the hindwing, which are of importance in generic classification, are a consequence of the absence of a frenulum and presence of a large costal expansion, which in moths of their heavy build has rendered adaptations towards strengthening this part of the wing a physiological necessity. The costal veinlets (or pseudoneuria) may be irregularly bifid or trifid towards apex; they are not otherwise very variable, as has been stated, at least in the Australian genera. I consider the single basal costal veinlet, with anastomosis of 7 with 8 near base, as the most primitive condition. With the elongation of the precostal cell a second veinlet is developed, and the basal veinlet may either persist or become obsolete. Faint indications of additional veinlets may occasionally be detected, but I have not met with more than two fully developed in the Australian genera. The large precostal cell met with in *Perna* and in extra-Australian genera I consider to be a later modification, the bar between 7 and 8 representing an anastomosis which has been gradually drawn out (the initial step is occasionally seen as an individual abnormality), and *not* an extra vein.

The following table does not pretend to be based on a complete revision of the Australian genera and species, but as a preliminary attempt will, I hope, prove useful.

- a.* Hindwings with 7 connected by a long bar with 8, precostal cell very large ... .. **Perna.**
- aa.* Hindwings with 7 anastomosing with 8 soon after origin, precostal cell small.
- b.* Hindwings with two costal veinlets, or with basal veinlet obsolete, leaving one from beyond middle of precostal cell.
- c.* Palpi long, over 4.
- d.* Forewings with 6, 7, 8 stalked.
- e.* Hindwings with 3, 4, 5 stalked ... .. **Digglesia.**
- ee.* Hindwings with 3, 4, 5 all separate ... .. **Rhathymodes.**
- dd.* Forewings with 8 separate.
- e.* Hindwings with 4 and 5 stalked ... .. **Entometa.**
- ee.* Hindwings with 4 and 5 separate ... .. **Opsirhina.**
- cc.* Palpi moderate, not exceeding 3.
- d.* Hindwings with 4 and 5 stalked ... .. **Symphyta.**
- dd.* Hindwings with 4 and 5 separate ... .. **Porela.**
- bb.* Hindwings with one strong costal veinlet from base of precostal cell.
- c.* Palpi short, not reaching beyond frontal tuft.
- d.* Hindwings with 4 and 5 connate or separate.
- e.* Forewings with 6, 7, 8 stalked ... .. **Pinara.**
- ee.* Forewings with 8 separate ... .. **Crexa.**
- dd.* Hindwings with 4 and 5 stalked ... .. **Cyclophragma**
- cc.* Palpi moderately long, reaching well beyond frontal tuft ... .. **Aspiducha.**

The probable affinities of these eleven genera are indicated by the following diagram:—



### GEN. PERNA.

*Perna*, Wlk., Cat. Brit. Mus. v, p. 1127.

Palpi moderately short. Forewings with 6 and 7 stalked, 9 and 10 stalked. Hindwings with 4 and 5 separate.

Type *Bombyx exposita*, Lew.

A development of *Aspiducha*, the anastomosis between 7 and 8 of hindwings being displaced distally and drawn out into a long bar.

**PERNA EXPOSITA.**

*Bombyx exposita*, Lew., Prodr. Ent. 8, Pl. vii.

*Brombyx pusilla*, Don., Ins. N. Holl.

♂ *Perna* ? *combinata*, Wlk., Cat. Brit. Mus. vii, p. 1757.

♀ *Pæcilocampa brevis*, Wlk., Cat. Brit. Mus. xxxii, p. 571.

♂ *Pæcilocampa hebes*, Wlk., Cat. Brit. Mus. xxxii, p. 571.

♀ *Tacillia rufocinerea*, Wlk., Cat. Brit. Mus. xxxii, p. 573.

N.Q. Cairns; Kuranda, 2, 3; Stannary Hills. Q. Brisbane, 1, 5, 10. N.S.W. Sydney. V. Melbourne, 4, 12.

**PERNA BREVIPENNIS.**

*Teara brevipennis*, Wlk., Cat. Brit. Mus. xxxii, p. 353.

*Bombyx figurata*, Luc., P.R.S.Q. 1901, p. 74.

N.Q. Kuranda, 2. Q. Brisbane, 8.

**PERNA CHLOROPHRAGMA.**

*Chlorophragma*, Meyr.

V. Kewell; Birchip, 2.

**GEN. DIGGLESIA nov.**

[After the late Mr. Diggles, the pioneer entomologist of Queensland.]

Palpi much elongated (over 3). Forewings with 6, 7, 8 stalked. Hindwings with 3, 4, 5 stalked, 7 anastomosing with 8 near base; precostal cell small, with a single postmedian costal veinlet.

An immediate derivative of *Entometa* differing in the stalking of vein 8 of the forewings and 3 of the hindwings.

**DIGGLESIA CROCOTA n. sp.**

[κροκωτος, saffron-coloured.]

♀. 54 mm. Head and thorax pale reddish-orange. Palpi very long (5), enlarged at apex; reddish-fuscous. Antennæ pale-ochreous. Abdomen pale reddish-ochreous, beneath dull reddish. Legs dull reddish. Forewings sub-oval, costa very strongly arched beyond middle, apex round-pointed, termen bowed, oblique; pale reddish-orange; markings pale-fuscous; an irregular line from

$\frac{1}{3}$  costa nearly to dorsum at  $\frac{1}{4}$ , joined near dorsum by a similar line from midcosta; a faintly marked line of dots from before apex to before tornus; cilia concolorous. Hindwings elongate; termen very strongly rounded; pale reddish-orange without markings; cilia whitish-ochreous. Underside similar but paler except for a very large costal blotch on hindwings extending to  $\frac{3}{4}$ , and traversed before midcosta by a pale-fusces transverse line.

Type in Queensland Museum.

N.Q. Cardwell; one specimen.

#### GEN. ENTOMETA.

*Entometa*, Wlk., Cat. Brit. Mus. iv, p. 972.

Type *E. marginata*, Wlk.

#### ENTOMETA MARGINATA.

♂. *Entometa marginata*, Wlk., Cat. Brit. Mus. iv, p. 972.

V. Gisborne, 2. T. ———.

#### ENTOMETA FERVENS.

♀. *Opsirrhina fervens*, Wlk., Cat. Brit. Mus. vi, p. 1419.

♂. *Lebeda apicalis*, Wlk., Cat. Brit. Mus. vi, p. 1464.

♀. *Opsirrhina decorata*, Wlk., Cat. Brit. Mus. xxxii, p. 555.

♀. *Opsirrhina sobria*, Wlk., Cat. Brit. Mus. xxxii, p. 556.

*Opsirrhina guttularis*, Wlk.

*Opsirrhina flexicosta*, Feld., Reise Nov. Pl. 84, f. 4, 5.

This species is individually variable, and appears also to vary according to locality.

N.Q. Cape York, 4; Q. Brisbane, 1, 2, 5. N.S.W. Broken Hill. V. Melbourne, 3; Gisborne, 11; Kewell, 4; Brentwood, 10, 11.

#### ENTOMETA OBSCURA.

♂. *Lebeda obscura*, Wlk., Cat. Brit. Mus. vi, p. 1464.

♂. *Lebeda saturata*, Wlk., Cat. Brit. Mus. xxxii, p. 569.

Differs from the preceding by the dark-fusces or blackish hindwings of the ♂. The ♀ seems to be hardly distinguishable.

N.S.W. Sydney. V. Melbourne. S.A. Adelaide.



**ENTOMETA ALBIDA.**

*Opsirhina albida*, Wlk., Cat. Brit. Mus. xxxii, p. 557.

*Pinara erubescens*, Low., Tr. R.S.S.A. 1894, p. 77.

Q. Rockhampton.

**ENTOMETA RUFESCENS.**

♀. *Gastropacha rufescens*, Wlk., Cat. Brit. Mus. vi, p. 1395.

♂. *Megasoma rubida*, Wlk., Cat. Brit. Mus. xxxii, p. 566.

Q. Brisbane, 11. N.S.W. Sydney, 4. V. Melbourne; Gisborne,  
1, 10. T. Hobart. S.A. ———.

**ENTOMETA CYCLOLOMA.**

*Entometa cycloloma*, Turn., Tr. R.S.S.A. 1902, p. 186.

*Entometa plinthopa*, Turn., Tr. R.S.S.A. 1904, p. 239.

In this and the following species the hindwings are elongate,  
with vein 3 usually, not always, stalked with 4, 5.

N.A. Port Darwin, 11. N.Q. Cooktown; Kuranda, 3, 10;  
Townsville, 7. Q. Nambour, 4.

**ENTOMETA SPODOPA.**

*Entometa spodopa*, Turn., Tr. R.S.S.A. 1904, p. 239.

Q. Brisbane, 5.

**ENTOMETA AUSTRALASIÆ.**

*Bombyx australasiæ*, Fab., Syst. Ent. iii (1), p. 422.

♂. *Opsirhina nasuta*, Wlk., Cat. Brit. Mus. vi, p. 1420.

♀. *Opsirhina intemerata*, Wlk., Cat. Brit. Mus. xxxii, p. 557.

♂. *Opsirhina cinerata*, Wlk., Cat. Brit. Mus. xxxii, p. 558.

♀. *Opsirhina pudorina*, Wlk., Cat. Brit. Mus. xxxii, p. 558.

Q. Brisbane, 2, 3, 4. N.S.W. Sydney. V. Gisborne, 1, 9  
Beaconsfield, 3. T. Launceston, 6; Hobart. S.A. Adelaide.

**ENTOMETA NANA.**

*Opsirhina nana*, Wlk., Cat. Brit. Mus. vi, p. 1421.

The smallest species.

T. Lefroy, 1. One specimen in Coll. Lyell.

## GEN. RHATHYMODES nov.

[ραθυμωδης, sluggish, lethargic.]

Palpi much elongated (over 3). Forewings with 6, 7, 8 stalked. Hindwings with 3, 4, 5 all separate, 7 anastomosing with 8 near base; precostal cell small, two strong costal veinlets, one from base, one from beyond middle of precostal cell.

A collateral ally of *Entometa*; more primitive in the neururation of the hindwing, more modified in that of the forewing.

## RHATHYMODES LECHRIODES n. sp.

♀. 60 mm. Head, thorax, and abdomen pale reddish-brown. Palpi very elongate (5); pale reddish-brown; terminal joint fuscous with pale-ochreous hairs. Antennæ pale-ochreous. Legs pale reddish-brown; tarsi fuscous with pale annulations. Forewings triangular, costa moderately arched, more strongly towards apex, apex round-pointed, termen bowed, oblique; pale reddish-brown tinged with ochreous; a double darker transverse line from  $\frac{1}{3}$  costa to  $\frac{1}{3}$  dorsum; a similar double sinuate line from  $\frac{2}{3}$  costa to  $\frac{2}{3}$  dorsum; a series of pale fuscous dots from before apex to before tornus; cilia ochreous-whitish. Hindwings with termen rounded; pale-reddish without markings; cilia ochreous-whitish. Underside pale-reddish without markings.

Type in Queensland Museum.

Q. Nerang, near Southport; one specimen.

## GEN. OPSIRHINA.

*Opsirhina*, Wlk., Cat. Brit. Mus. vi, p. 1419.

Type *O. albigutta*, Wlk.

## OPSIRHINA ALBIGUTTA.

*Opsirhina albigutta*, Wlk., Cat. Brit. Mus. vi, p. 1419.

V. Gisborne, 2. T. Hobart.

## GEN. SYMPHYTA.

*Symphyta*, Turn., Tr. R.S.S.A. 1902, p. 187.

Type *S. psaropis*, Turn.

**SYMPHYTA PSAROPIS.**

*Symphyta psaropis*, Turn., Tr. R.S.S.A. 1902, p. 187.  
N.Q. Kuranda, 2; Townsville, 1, 2.

**SYMPHYTA NYCTOPIS.**

*Symphyta nyctopis*, Turn., Tr. R.S.S.A. 1902, p. 187.  
N.Q. Townsville, 1, 2, 3.

**GEN. PORELA.**

*Porela*, Wlk., Cat. Brit. Mus. iii, p. 772.

Type *Porela vetusta*, Wlk. In this genus are merged *Sitina*, Wlk. (type *vitulina*), *Sinaga*, Wlk. (type *subfasciata*), *Clathe*, Wlk. (type *arida*), and probably also *Callia*, Wlk. (type *albifinis*).

**PORELA VITULINA.**

*Bombyx vitulina*, Don., Ins. N. Holl.

Q. Brisbane; Southport. N.S.W. Newcastle. V. Melbourne,  
1, 12.

**PORELA SUBFASCIATA.**

*Sinaga subfasciata*, Wlk., Cat. Brit. Mus. iv, p. 855.

T. Ulverstone; Kelso; Georgetown.

**PORELA ARIDA.**

♀. *Clathe arida*, Wlk., Cat. Brit. Mus. v, p. 994.

♀. *Listoca lignaria*, Wlk., Cat. Brit. Mus. v, p. 1021.

♂. *Sorema nubila*, Wlk., Cat. Brit. Mus. v, p. 1065.

♀. *Perna metastigma*, Wlk., Cat. Brit. Mus. xxxii, p. 477.

N.Q. Prince of Wales Island, 6; Ingham. Q. Duaringa;  
Brisbane, 1, 3, 6, 9, 11. N.S.W. Sydney, 2, 10, 11.

**PORELA VETUSTA.**

*Porela vetusta*, Wlk., Cat. Brit. Mus. iii, p. 772.

*Perna varia*, Wlk., Cat. Brit. Mus. iv, p. 1128.

*Clathe anthracica*, Turn., Tr. R.S.S.A. 1902, p. 186.

N.S.W. Sydney, 10; Katoomba, 10. V. Healesville, 11.

**PORELA HOMOSPILA.***Homospila*, Meyr.

V. Birchip, 11.

**PORELA NOTABILIS.***Teara notabilis*, Wlk., Cat. Brit. Mus. iv, p. 852.*Bombyx mioleuca*, Meyr., Tr. R.S.S.A. 1891, p. 190.

V. Birchip, 4, 6. S.A. Adelaide; Mount Lofty.

**PORELA NOTODONTINA.***Cosmotricha notodontina*, Feld., Pl. 84, f. 11.

N.S.W., 4. V. Birchip, 4; Springvale. T. Hobart.

**GEN. PINARA.***Pinara*, Wlk., Cat. Brit. Mus. iii, p. 761.Type *Pinara cana*, Wlk.

This genus and the following are nearly allied though easily separated by the neuration. They are somewhat specialised, more particularly in the great disparity and dissimilarity of the sexes. While the males of the species of *Pinara* are sufficiently distinct, the females are so similar as to be distinguishable with difficulty.

**PINARA CANA.**♀. *Pinara cana*, Wlk., Cat. Brit. Mus. iii, p. 761.

N.S.W. Glen Innes, 12. T. ———.

**PINARA DIVISA.**♂. *Entometa divisa*, Wlk., Cat. Brit. Mus. iv, p. 973.♂. ——— *rufescens*, Butl.

Q. Stanthorpe, 2. V. Gisborne, 11.

**PINARA OBLIQUA.**♂. *Entometa obliqua*, Wlk., Cat. Brit. Mus. iv, p. 973.*Rhinogyne calligama*, Feld., Reise Nov. Pl. 84, f. 9, 10.

V. Gisborne, 10, 11. T.



**PINARA METAPHÆA.**

♀. *Opsirhina metaphæa*, Wlk., Cat. Brit. Mus. xxxii, p. 556.

♂. *Entometa adusta*, Wlk., Char. Undescr. Lep., p. 16.

Q. Rockhampton; Nambour, 10; Brisbane, 1, 8, 11.

**GEN. CREXA.**

*Crexa*, Wlk., Cat. Brit. Mus. xxxv, p. 1927.

Type *Entometa punctigera*, Wlk.

In this genus the sexual dimorphism is even more marked than in *Pinara*, but the females of the different species are sufficiently distinct from each other, while in some instances the males are closely similar.

**CREXA MACROPTILA** n. sp.

[μακροπτελος, long-winged.]

♂. 27 mm. Head and palpi white. Antennæ ochreous-brown. Thorax-ochreous-brown mixed with white. Abdomen with a long trifold terminal tuft; ochreous-brown; beneath whitish. Legs fuscous mixed with whitish. Forewings elongate-triangular, costa straight nearly to apex, apex rounded, termen gently bowed, extremely oblique; brownish-ochreous-fuscous; mid-disc thinly scaled, translucent; a white dot at base; a triangular dark basal patch, sharply defined; a white discal spot beneath mid-costa, with a fuscous dot on each side of it; a fine whitish wavy line from  $\frac{2}{3}$  costa to before tornus; a subterminal row of fuscous spots edged posteriorly with whitish; cilia fuscous. Hindwings markedly elongate, costa short, termen and dorsum long; brownish-ochreous; a dark fuscous band along costa and termen; cilia white. The cell of hindwing is unusually long, reaching to  $\frac{4}{5}$ .

Type in Coll. Turner.

N.Q. Chillagoe, in March; one specimen received from Mr. F. P. Dodd.

**CREXA DIANIPHA** n. sp.

[διανιφος, marked with snow-white.]

♀. 40 mm. Head, palpi, and thorax whitish. Antennæ fuscous. Abdomen brown, apex and underside whitish. Legs dark-fuscous, mixed, and tarsi annulated, with whitish. Forewings

triangular, costa straight to near apex, apex rounded, termen bowed, oblique; fuscous with some faint whitish irroration; a fine crenulate whitish line from  $\frac{1}{3}$  costa to mid-dorsum; a white median discal spot with a dark-fuscous spot on each side; a clear white fascia from  $\frac{2}{3}$  costa to dorsum beyond middle, narrow on costa, soon broadening, and then traversed near posterior edge by a fine interrupted crenulate fuscous line; a faint whitish interrupted crenulate sub-terminal line; cilia fuscous. Hindwings with termen rounded; fuscous; veins and a suffused dorsal area ochreous-brown; a whitish transverse line before middle; cilia fuscous.

It is just possible that this may be the ♀ of the preceding species.

Type in Coll. Lyell.

N.Q. Cape York, in April; one specimen received from Mr. H. Elgner.

#### CREXA PUNCTIGERA.

♂. *Entometa punctigera*, Wlk., Cat. Brit. Mus. iv, p. 974.

♀. *Mecytha trimacula*, Wlk., Cat. Brit. Mus. v, p. 1122.

♂. *Crexa anthraxoides*, Wlk., Cat. Brit. Mus. xxxv, p. 1926.

♀. *Dichromosoma majus*, Feld., Reise Nov. Pl. 83, f. 26.

N.Q. Cape York, 3; Kuranda. V. Melbourne, 11; Gisborne, 1, 2, 11, 12. T. Launceston, 2, 12; Ulverstone.

#### CREXA SUBNOTATA.

♀. *Tolyte subnotata*, Wlk., Char. Undesc. Lep. Het., p. 67.

I have seen what I take to be the ♂ of this species. It is very similar to the ♂ of *pinnalis*, which I have described, but smaller, with discal spot on forewing nearly obsolete, and without the blackish dorsal spot.

V. Melbourne, 12; Gisborne, 12.

#### CREXA PINNALIS.

♀. *Bombyx pinnalis*, Luc., Tr. Nat. Hist. Soc. Q. 1894, p. 103.

♂. *Crexa hyaloëssa*, Turn., Tr. R.S.S.A. 1902, p. 184.

In spite of their great dissimilarity I am confident that these will prove to be sexes of one species.

Q. Brisbane, 1, 2, 3, 4.

**CREXA ACEDESTA** n. sp.

[ἀκηδεστος, neglected.]

♂ ♀. 26-34 mm. Head white, palpi fuscous. Antennæ fuscous. Thorax in ♂ dark-fuscous; in ♀ white. Abdomen dark-fuscous; tuft in ♀ white. Legs fuscous mixed with whitish. Forewings elongate-triangular, narrower in ♂, costa straight to near apex, apex rounded, termen bowed oblique; fuscous-grey; a crenulate whitish line from  $\frac{1}{4}$  costa to  $\frac{1}{3}$  dorsum; a brownish discal spot beneath mid-costa, minutely white-centred, and edged anteriorly and posteriorly with blackish; a dentate whitish line from  $\frac{2}{3}$  costa, bent inwards above dorsum, with a blackish spot containing some brown scales resting on indentation, and ending on  $\frac{2}{3}$  dorsum; a whitish crenulate subterminal line, edged anteriorly with dark-fuscous; cilia grey mixed with whitish. Hindwings with termen rounded; in ♂ fuscous, in ♀ grey; a white transverse line before middle, in ♂ straight, in ♀ twice dentate; terminal edge and cilia whitish.

The sexes differ but slightly except in the colour of the thorax.

Types in Coll. Lyell.

V. Birchip, 3, 4, 9 S.A. Adelaide.

**GEN. CYCLOPHRAGMA** nov.

[κυκλοφραγμος, with rounded edge.]

Palpi short, not extending beyond frontal tuft. Forewings with 6 and 7 stalked. Hindwings with 4 and 5 stalked, 7 anastomosing with 8 near base; a basal costal veinlet fairly well developed, faint indications of two or three additional veinlets.

**CYCLOPHRAGMA CYCLOMELA.**

*Opsirrhina cyclomela*, Low., Tr. R.S.S.A. 1903, p. 183.

N.Q. Cooktown; Townsville, 6.

**GEN. ASPIDUCHA** nov.

[ἀσπιδουχος, a shield-bearer.]

Palpi moderately long, much exceeding frontal tuft. Forewings with 6 and 7 stalked. Hindwings with 4 and 5 separate,

7 anastomosing with 8 near base, precostal cell small, a single basal costal veinlet.

Type *Clathe pyrsocoma*, Turn.

### ASPIDUCHA PYRSOCOMA.

*Clathe pyrsocoma*, Turn., Tr. R.S.S.A. 1902, p. 185.

N.A. Port Darwin, 3, 10. N.Q. Thursday Island; Cooktown; Stannary Hills; Townsville, 1. Q. Brisbane.

### ASPIDUCHA OBTUSA.

♀. *Pinara obtusa*, Wlk., Cat. Brit. Mus. xxxi, p. 315.

♂. *Opsirhina metastigma*, Wlk., Cat. Brit. Mus. xxxii, p. 556.

N.S.W. Sydney, 10.

### ASPIDUCHA FOLA.

*Clathe fola*, Swin., A.M.N.H. 1902, p. 82.

N.W.A. Roeburne; one ♀ example in Coll. Lyell.

## FAM. DREPANIDÆ.

A critical study of this small family, which is developed mainly in the Indo-Malayan region, should be of great interest, both on account of the considerable range of structural variation within the family, and because of its probable relationship to other groups. Three species are known in Queensland, all belonging to the most modified section, in which the frenulum and tongue are both absent. I refer them to three genera all closely related to the Indian genus *Oreta*, Wlk.

- |     |   |     |     |             |
|-----|---|-----|-----|-------------|
| a.  | Forewings with 7 and 8 coincident, 9 arising separately from cell; hindwings with 7 anastomosing with 8 | ... | ... | Amphitorna. |
| aa. | Forewings with 7 and 8 stalked, 9, 10, 11 stalked; hindwings with 7 approximated to 8.                  |     |     |             |
| b.  | Palpi minute  | ... | ... | Neoreta.    |
|     | Palpi well-developed, upturned  | ... | ... | Holoreta.   |

### GEN. AMPHITORNA nov.

[ἀμφιτορνος, well-rounded.]

Tongue absent. Palpi minute. Antennæ laminate in both sexes, the laminations broad and closely appressed. Middle and posterior tibiæ with well-developed terminal spurs, the latter without



middle spurs. Forewings falcate; 7 and 8 coincident, 10 and 11 long-stalked, 9 arising separately from cell, soon anastomosing with 10 from near origin (forming a small areole) to below 11, then anastomosing with 8. Hindwings with 6 from upper angle of cell, 7 from costal edge of cell, anastomosing with 8.

### AMPHITORNA FUSCIMARGO.

*Oreta fuscimargo*, Warr., Nov. Zool. 1896, p. 338.

*Oreta pusilla*, Warr., Nov. Zool. 1900, p. 99.

*Oreta roseola*, Warr., Nov. Zool. 1900, p. 99.

Very variable in colour. I have two ♀ examples; one is reddish with a very distinct dark oblique line across both wings; the other is greyish-ochreous with the line nearly obsolete. My identification of them with Mr. Warren's species is conjectural. He himself (Nov. Zool. 1907, p. 98) regards them as probably forms of one species. I imagine that the neuration of *pusilla* and *roseola* is not accurately stated.

N.Q. Kuranda, 4, 11, 12. Q. Duaringa; Yeppoon.

### GEN. NEORETA.

*Neoreta*, Warr., Nov. Zool. 1897, p. 378.

Differs from *Oreta* in the bipectinate antennæ and presence of terminal tibial spurs. (*Oreta*, Section IIA. Moths Ind. i, p. 350.) Type *Oreta olga*, Swin., from India.

### NEORETA ERMINEA.

*Cobanilla erminea*, Warr., Nov. Zool. 1899, p. 1. *Oreta miltodes*, Low., Tr. R.S.S.A. 1903, p. 29. *Oreta hypocalla*, Low., Tr. R.S.S.A. 1905, p. 179. Also variable in colour.

N.Q. Kuranda, 9; Townsville, 1, 5, 12. Also from Louisiades and Kei Islands.

### GEN. HOLORETA.

*Holoreta*, Warr., Nov. Zool. 1902, p. 340.

Differs from *Neoreta* in the longer upturned paipi. (*Oreta*, Sec. IIB. Hmps., Moths Ind. i, p. 351.)

### † HOLORETA JASPIDEA.

*Cobanilla jaspidea*, Warr., Nov. Zool. 1896, p. 335.

N.Q. Cooktown.

## FAM. THYRIDIDÆ.

Since I last treated of this family my material has considerably increased. I have now 32 species before me, and there are 4 recorded which I have not seen. I shall therefore make a fresh attempt to reduce the Australian species to some preliminary order. The species are mostly very similar, and a great many have been described, often very imperfectly, from the Indo-Malayan region, so that it is probable that some of my new names may turn out to be synonymous; even so I hope that the descriptions will prove useful. In identifying species particular attention should be given to the underside of the forewings.

The disco-cellulars are very weakly developed in most genera. In particular the dorsal disco-cellular of the forewing is frequently obsolete between veins 5 and 6, but I do not think this is a trustworthy generic character; indeed it does not seem to be always constant in the species, for instance *Striglina pyrrhata*.

*Tabulation of Genera.*

- a. Hindwing with 5 from near lower angle of cell.
  - b. Disco-cellulars of forewing strongly oblique; costal edge of cell much longer than dorsal; antennæ bipectinate in both sexes ... .. **Oxycophina.**
  - bb. Cell of forewing normal; antennæ in ♀ not pectinate.
    - c. Frons rounded; palpi porrect or obliquely ascending, second joint stout and densely scaled, terminal joint short; posterior tibiæ with long dense hairs; thorax and abdomen stout.
      - d. Forewing with vein 8 strongly curved and approximated to 9; antennæ of ♂ unipectinate ... .. **Canæa.**
      - dd. Forewing with vein 8 not strongly curved; antennæ in ♂ not unipectinate.
        - e. Forewing with 7 and 8 stalked ... .. **Aglaopus.**
        - ee. Forewing with 9 and 10 stalked ... .. **Trophoessa.**
        - eee. Forewing with all veins separate ... .. **Striglina.**
    - cc. Frons flat; palpi ascending, closely approximated to frons, second joint smooth, slender, terminal joint usually long; posterior tibiæ smooth or short-haired; thorax and abdomen slender.
      - d. Forewings with 8 and 9 stalked ... .. **Hypolamprus.**
      - dd. Forewings with 8 and 9 separate (rarely short-stalked).
        - e. Abdomen elongate, in ♂ as long as forewing ... .. **Obelura.**
        - ee. Abdomen moderate, in ♂ much shorter than forewing ... .. **Rhodoneura.**
- aa. Hindwing with 5 from middle of disco-cellulars ... .. **Addæa.**

## GEN. OXYCOPHINA.

*Oxycophina*, Warr., Nov. Zool. 1896, p. 342.

In the forewing veins 7 and 8 may be separate, connate, or short-stalked.

Type *Siculodes theorina*, Meyr.

## OXYCOPHINA THEORINA.

*Siculodes theorina*, Meyr., Tr. E.S. 1887, p. 200.

*Oxycophina subfenestrata*, Warr., Nov. Zool. 1896, p. 342.

N.Q. Cairns; Kuranda, 4, 9, 12; Geraldton. Also from Kei Islands and New Britain.

## GEN. CANÆA.

*Canæa*, Wlk., J. Linn. Soc. vii, p. 73 (1864); Warr., Nov. Zool. 1905, p. 410.

Type *semitessellalis*, Wlk.

## CANÆA SEMITESSELLALIS.

*Pyralis* ? *semitessellalis*, Wlk., Brit. Mus. Cat. xxxiv, p. 1246.

*Striglina hyalospila*, Low., Tr. R.S.S.A. 1894, p. 87.

N.Q. Kuranda, 9; Townsville. Q. Brisbane, 2. Also from New Guinea, Borneo, and India.

## GEN. AGLAOPUS nov.

[ἀγλαοπους, with brilliant feet.]

Frons rounded. Tongue well developed. Palpi obliquely ascending; second joint long and thickened with dense scales; terminal joint extremely short. Antennæ in ♂ with short ciliations and slightly longer bristles. Thorax and abdomen stout. Posterior tibiæ thickened with long dense hairs. Forewings with 7 and 8 stalked, 9 and 10 parallel and closely approximated. Hindwings with 5 from lower angle of cell, 7 from above upper angle, closely approximated to 8 for a short distance.

## AGLAOPUS NIPHOCOSMA n. sp.

[νιφοκοσμος, with snowy ornament.]

♂. 32 mm. Head, palpi, and thorax orange-red. Antennæ orange-red; basal joint white; ciliations in ♂  $\frac{1}{2}$ , bristles  $\frac{2}{3}$ .

Abdomen orange-red tinged with rosy. Legs orange-red tinged with rosy; anterior femora and tarsi fuscous above, beneath white with some rosy scales; a large median snow-white spot on upper surface of anterior tibiæ; anterior tarsi tawny-fuscous, middle and posterior tarsi fuscous, apices of all tarsal joints snow-white. Forewings triangular; costa nearly straight, apex obtuse, termen bowed, slightly oblique; orange-red, with numerous pale-fuscous transverse strigulæ, which form a suffused subcostal streak for about  $\frac{2}{3}$ ; cilia orange-red, apices rosy, towards tornus extreme apices snow-white. Hindwings with termen bowed; as forewings; dorsal cilia very dense and rosy-tinged. Underside similar, but with subcostal and dorsal rosy suffusion in forewings, and an extensive rosy suffusion in hindwings covering dorsal half of disc.

Type in Coll. Lyell.

N.A. Port Darwin, in January; one specimen received from Mr. F. P. Dodd.

#### GEN. TROPHOËSSA nov.

[*τροφοεις*, stout.]

Frons with a rounded projection. Palpi obliquely ascending; second joint thickened by dense appressed scales, long, reaching nearly to vertex; terminal joint short, stout, obtuse. Antennæ of ♂ simple, naked. Thorax and abdomen stout. Posterior tibiæ with long dense hairs. Forewings with 9 and 10 stalked. Hindwings with 5 from near lower angle of cell, 7 from above upper angle, closely approximated to 8 soon after origin.

#### TROPHOËSSA DAPHENÆ n. sp.

[*δαφεινος*, reddish, tawny.]

♂♀. 34-36 mm. Head and palpi purple-fuscous. Antennæ pale-fuscous. Thorax reddish, anteriorly ochreous-fuscous. Abdomen reddish with some fuscous and ochreous-whitish scales. Legs purple-fuscous; tarsi fuscous with whitish-ochreous annulations. Forewings triangular, costa nearly straight, apex obtuse, termen very strongly bowed, oblique; reddish-ochreous or tawny with fine transverse fuscous strigulæ; beneath mid-disc a group of two or more circular hyaline spots bare of scales, better developed in ♀; cilia fuscous with a crimson sub-basal line. Hindwings with



termen gently rounded; colour, strigulations, and cilia as forewings; a fuscous sub-basal dot at  $\frac{1}{2}$ . Underside as upper but forewings generally suffused with fuscous, and with a fuscous subapical blotch on termen.

Type in Coll. Turner.

N.Q. Kuranda, in January, May, and November; six specimens received from Mr. F. P. Dodd.

### GEN. STRIGLINA.

*Striglina*, Gn., Ann. Soc. Ent. Tr. 1877, p. 283; Hmps., P.Z.S. 1897, p. 612.

Distinguished from *Rhodoneura* by the generally stout build, hairy palpi and posterior tibiæ, and rounded frons. Probably both genera may need further subdivision, but the distinctions given are primary and natural.

### STRIGLINA SCITARIA.

*Drepanodes scitaria*, Wlk., Brit. Mus. Cat. xxvi, p. 1488.

N.A. Port Darwin, 12. N.Q. Thursday Island; Cairns; Kuranda, 4; Geraldton; Townsville, 8. Also from New Guinea, Solomons, Fiji, Borneo, Formosa, Japan, Amur, Ceylon, and India.

### STRIGLINA LOXOMITA.

*Rhodoneura loxomita*, Turn., P.R.S.Q. 1905, p. 64.

Q. Brisbane, 1; Mt. Tambourine, 2.

### STRIGLINA PYRRHATA.

*Arhodia pyrrhata*, Wlk., Brit. Mus. Cat. xxxv, p. 1575.

*Striglina pyrrhata*, Meyr., Tr. E.S. 1887, p. 199.

Q. Brisbane. N.S.W. Sydney. V. Warragul; Gisborne.

### STRIGLINA CENTIGINOSA.

*Striglina centiginosa*, Luc., P.R.S.Q. 1898, p. 81.

*Rhodoneura centiginosa*, Turn., P.R.S.Q. 1903, p. 111.

*Rhodoneura cypholoma*, Turn., P.R.S.Q. 1903, p. 112.

Variable in colour from reddish-ochreous to grey, and also in the occasional development of a median fuscous band in wings. The shape of the forewings also varies somewhat, but the species is always distinguishable by the excavation above tornus.

N.A. Port Darwin, 12. N.Q. Townsville, 1, 2, 12. Q. Brisbane, 1, 2, 10, 11, 12.

### STRIGLINA IRIAS.

*Striglina irias*, Meyr., Tr. E.S. 1887, p. 199.

Q. Rockhampton; Gayndah; Brisbane, 10, 11, 12; Dalby; Miles, 12.

### STRIGLINA MYRSALIS.

*Pyralis myrsusalis*, Wlk., Brit. Mus. Cat. xix, p. 892.

*Rhodoneura myrsusalis*, Hmps., Moths Ind. i, p. 357.

N.A. Port Darwin, 10. N.Q. Kuranda, 10; Townsville, 1, 2. Also from the tropics of both hemispheres.

### GEN. HYPOLAMPRUS.

*Hypolamprus*, Hmps., Moths Ind. i, p. 364, P.Z.S. 1897, p. 614.

I am not sure that the stalking of veins 8 and 9 of forewings is a reliable distinction between this genus and *Rhodoneura*.

### HYPOLAMPRUS MARGINIPUNCTALIS.

*Microsca marginepunctalis*, Leech, Entom. 1889, p. 66, Pl. iv, f. 10.

*Hypolamprus pallescens*, Hmps., P.Z.S. 1897, p. 614.

N.Q. Cooktown; Kuranda, 3, 4; Cardwell, 8; Ingham, 9. Also from Louisiades, Borneo, Japan, and India.

### HYPOLAMPRUS SUBROSEALIS.

*Microsca subrosealis*, Leech, Entom. 1889, p. 66, Pl. iv, f. 14.

*Hypolamprus subrosealis*, Hmps., Moths Ind. i, p. 366.

N.Q. Thursday Island. Also from Borneo, China, Ceylon, and India.

### HYPOLAMPRUS HEMICYCLUS.

*Siculodes hemicycla*, Meyr., Tr. E.S. 1886, p. 216.

Q. Brisbane. Also from Fiji.

**HYPOLAMPRUS COSTISCRIPATUS.**

*Pharambara costiscripta*, Warr., A.M.N.H. (6) xvii, p. 209.

N.Q. Kuranda, 3, 4, 10; Herberton, 2. Also from New Guinea.

† **HYPOLAMPRUS LEOPARDATUS.**

*Hypolamprus leopardata*, Warr., Nov. Zool. 1897, p. 380.

N.Q. Cooktown.

**HYPOLAMPRUS ÆNICTODES** n. sp.

[*ἀνικτωδης*, obscure.]

♀. 23 mm. Head, palpi, antennæ, thorax, and abdomen reddish-grey. Palpi ascending, appressed to frons; terminal joint  $\frac{2}{3}$ . Legs reddish-grey; anterior coxæ with some fuscous scales. Forewings elongate-triangular, costa straight for  $\frac{1}{5}$ , apical  $\frac{1}{5}$  arched, apex round-pointed, termen sinuate beneath apex, strongly bowed between veins 2 and 5, strongly oblique; grey-reddish, paler towards costa; with small scattered fuscous strigulæ coalescing to form slender lines towards dorsum, and an interrupted subterminal line; a fuscous subapical dot; cilia fuscous. Hindwings with termen strongly bowed between veins 2 and 5; as forewings but somewhat redder, and with fuscous strigulæ less marked. Underside similar but with strigulæ more numerous and better defined; an interrupted streak of lustrous iridescent scales along costal vein of forewings continued along common stalk of 7 and 8, and for an equal distance along vein 6, a similar streak beneath costal vein from  $\frac{1}{6}$  to near middle, running into cell; all these streaks edged with blackish scales.

Type in Coll. Turner.

N.A. Port Darwin, in January; one specimen received from Mr. F. P. Dodd.

**HYPOLAMPRUS SCIODES** n. sp.

[*σκιωδης*, shaded.]

♂. 17 mm. Head, thorax, and abdomen whitish-ochreous with some brownish suffusion; face, palpi, and antennæ reddish-brown. Palpi ascending, appressed to frons; terminal joint  $\frac{2}{3}$ . Antennæ in ♂ without apparent ciliations. Legs whitish-ochreous; anterior

pair brownish-ochreous. Forewings rather elongate-triangular, costa straight for  $\frac{3}{4}$ , then slightly arched, apex acute, termen slightly sinuate, bowed, oblique; brown-ochreous-whitish with darker transverse strigulae; basal third suffused with pale-fuscous except towards costa; two smaller suffusions, one near dorsum at  $\frac{1}{5}$ , another near termen above middle; cilia brownish. Hindwings with termen rounded; similar to forewings; small fuscous suffusions towards dorsum near base and beyond middle. Underside similar but brighter; fuscous suffusions much smaller and more sharply defined.

Type in Coll. Turner.

N.Q. Kuranda, in November; one specimen received from Mr. F. P. Dodd.

#### GEN. OBELURA.

*Obelura*, Warr., Nov. Zool. 1908, p. 342.

#### OBELURA DOHERTYI.

*Banisia ? doherlyi*, Warr., Nov. Zool. 1897, p. 196.

*Rhodoneura stenosoma*, Hmps., P.Z.S. 1897, p. 617.

N.Q. Kuranda, 1. Also from Bali, Malay Peninsula, and Ceylon.

#### GEN. RHODONEURA.

*Rhodoneura*, Gn., Lep. x, pl. 1, fig. 8; Hmps., P.Z.S. 1897, p. 615.

#### RHODONEURA ELONGATA.

*Anisia elongata*, Warr., Nov. Zool. 1896, p. 340.

N.Q. Cooktown; Kuranda, 3, 4, 5, 9, 10.

#### RHODONEURA YPSILON.

*Baisia ypsilon*, Warr., Nov. Zool. 1899, p. 316.

I have two examples of this species; in one veins 8 and 9 of the forewings are short-stalked, in the other they are separate.

N.A. Hammer Island; N.Q. Kuranda, 9, 10; Q. Gayndah.

#### RHODONEURA AUSTRALIÆ.

*Brixa australiæ*, Warr., Nov. Zool. 1908, p. 329.

Readily distinguishable by the triangular white subapical costal blotch.

N.Q. Kuranda, 5, 9, 10; Q. Yeppoon, 10; Brisbane, 3.



**RHODONEURA TETRAGONATA.**

*Banisia tetragonata*, Wlk., J. Linn. Soc. vii, p. 78.

*Banisia dissimulans*, Warr., A.M.N.H. (6) xviii, p. 227.

*Banisia ordinaria*, Warr., A.M.N.H. (6) xviii, p. 228.

Mr. Warren described *dissimulans* from India and *ordinaria* from Australia in the same paper. Sir George Hampson catalogued them as the same species (P.Z.S. 1897, p. 619). Subsequently Mr. Warren has sunk *ordinaria* as a subspecies of *tetragonata*, Wlk. (Nov. Zool. 1908, p. 328). The Indian examples are much larger than those from Australia. A noteworthy characteristic of the species is the occurrence of one or two hyaline foveæ beneath origin of vein 2 of forewings in ♂.

N.Q. Kuranda, 3, 4, 10, 11, 12; Ingham, 9; Herberton, 12; Mackay. Q. Stradbroke Island, 11. Also from the Archipelago and India.

**† RHODONEURA AURATA.**

*Pharambara aurata*, Butl., A.M.N.H. (5) x, p. 233.

*Siculodes hydreuretis*, Meyr., P.L.S.N.S.W. 1886, p. 253. Also from New Britain.

**† RHODONEURA CRYPSIRIA.**

*Pharambara reticulata*, Butl., Tr. E.S. 1886, p. 420 (*procc.*).

*Siculodes crypsiria*, Meyr., Tr. E.S. 1887, p. 201.

Q. Peak Downs; Duaringa.

**RHODONEURA FURCIFERA.**

*Rhodoneura furcifer*, Hmps., J. Bomb. Soc. xiii, p. 50.

N.A. Port Darwin, 1. N.Q. Townsville, 2. Q. Brisbane, 2, 3.

**RHODONEURA BASTIALIS.**

*Pyralis bastialis*, Wlk., Brit. Mus. Cat. xix, p. 52.

*Rhodoneura bastialis*, Hmps., Moths Ind. i, p. 57.

N.A. Port Darwin, 2, 10. N.Q. Kuranda, 2; Geraldton; Townsville, 2. Also from Solomons, Ceylon, and India.

**RHODONEURA POLYGRAPHALIS.**

*Pyralis? polygraphalis*, Wlk., Brit. Mus. Cat. xxxiv, p. 1240.

*Siculodes rhythmica*, Meyr., Tr. E.S. 1887, p. 201.

N.A. Port Darwin, 9, 10, 11. N.Q. Thursday Island; Kuranda, 5, 9; Herberton. Also from Solomons, Ceylon, and India.

**† RHODONEURA ALBIFERALIS.**

*Pyralis albiferalis*, Wlk., Brit. Mus. Cat. xxxiv, p. 1524.

N.Q. Cooktown. Also from New Guinea and Batchian.

**RHODONEURA HYPARGYRA.**

*Rhodoneura hypargyra*, Hmps., Moths Ind. i, p. 357.

*Siculodes mochlias*, Meyr., Tr. E.S. 1894, p. 479.

N.Q. Cape York, 8; Kuranda, 10. Two specimens in Coll. Lyell. Also from India.

**RHODONEURA CRYPSILITHA** n. sp.

[*κρυψιλίθος*, with hidden jewels.]

♀. 18 mm. Head, palpi, antennæ, and thorax brownish-fuscous. Palpi obliquely ascending; terminal joint  $\frac{1}{3}$ . Abdomen pale ochreous-fuscous. Legs brown-whitish; posterior pair paler. Forewings elongate-triangular, costa gently arched, more strongly towards apex, apex round-pointed, termen sinuate, slightly bowed, oblique; pale dull-reddish, with numerous faint fuscous transverse strigulæ; cilia pale fuscous-reddish. Hindwings with termen slightly rounded; similar to forewings but fuscous strigulæ more pronounced. Underside similar; forewings with an irregular fuscous suffusion above tornus, and a triangular fuscous mark on termen beneath apex; lower half of basal  $\frac{2}{3}$  of cell occupied by a thick black line interrupted by numerous bars of lustrous iridescent scales; above and below this are numerous fine black longitudinal streaks; another patch of these streaks immediately beyond cell.

Type in Coll. Turner.

Q. Brisbane, in December; one specimen.

**RHODONEURA RHAPHIDUCHA** n. sp.

[ῥαφιδουχος, needle-bearing.]

♂ ♀. 20-23 mm. Head, antennæ, and thorax whitish-ochreous. Antennal ciliations in ♂ inappreciable. Palpi ascending, appressed to frons; terminal joint  $\frac{1}{2}$ . Abdomen whitish with some pale-fuscous median dorsal spots. Legs brown-whitish annulated with white. Forewings elongate-triangular, costa straight for  $\frac{4}{5}$ , then arched; apex pointed, termen slightly bowed, oblique; whitish-ochreous with numerous distinct fine fuscous transverse strigulæ; a quadrangular fuscous spot on  $\frac{2}{3}$  dorsum; cilia whitish-ochreous, interrupted by fuscous opposite veins. Hindwings with termen rounded, incised between veins 5 and 6; as forewings. Underside similar; forewings with a brownish patch in basal half of cell, irrorated with lustrous opalescent and with black scales; a similar smaller patch immediately beyond cell.

Type in Coll. Turner.

N.Q. Kuranda, in September and May; Herberton, in January; three specimens received from Mr. F. P. Dodd.

**RHODONEURA CROSSOSTICHA** n. sp.

[κροσσοστιχος, with marginal line.]

♂. 14 mm. Head, palpi, antennæ, thorax, abdomen, and legs dull pale-reddish. Antennal ciliations in ♂ inappreciable. Palpi obliquely ascending; terminal joint  $\frac{1}{4}$ . Forewings elongate-triangular, costa straight for  $\frac{5}{6}$ , arched before apex, apex round-pointed, termen sinuate beneath apex, then bowed, oblique; dull pale-reddish with slightly darker transverse strigulations; a white discal spot at end of cell; a fine vertical fuscous line from mid-termen to vein 7; a fuscous dot on termen above tornus; cilia pale dull-reddish, with a fuscous spot opposite mid-termen. Hindwings with termen slightly sinuate; colour and discal spot as forewings, but without fuscous line or spots. Underside similar but brighter; strigulations on forewings forming interrupted fasciæ; first at  $\frac{1}{3}$ ; second median, bifurcating at discal dot, the two limbs expanded on costa at middle and  $\frac{3}{4}$ ; third incomplete running inside fuscous line, not reaching vein 8.

Type in Coll. Turner.

N.A. Port Darwin, in December; one specimen received from Mr. F. P. Dodd.

## GEN. ADDÆA.

*Addæa*, Wlk., Brit. Mus. Cat. xxxiv, p. 1201; Hmps., P.Z.S. 1897, p. 632.

*Mesopempta*, Meyr., Tr. E.S. 1886, p. 217.

## ADDÆA POLYPHORALIS.

*Pyralis?* *polygraphalis*, Wlk., Brit. Mus. Cat. xxxiv, p. 1245 (*præocc.*).

*Pyralis polyphoralis*, Wlk., Brit. Mus. Cat. xxxv, p. 1977.

My specimens are very constant in colour and marking, and agree exactly with the British Museum type.

N.Q. Kuranda, 4, 5, 10; Geraldton, 11.

## ADDÆA CASTANEATA.

*Mesopempta polyphoralis*, Meyr., Tr. E.S. 1887, p. 202, *nec* Wlk.

*Addæa castaneata*, Warr., Nov. Zool. 1908, p. 325.

I formerly confused this species with the preceding, and Mr. Meyrick has made the same mistake. It is distinguishable by its reddish-ochreous colouration, and straight outer edge of median fascia. It appears to be the same as Mr. Warren's species, though his type is larger.

N.A. Port Darwin, 10, 12; N.Q. Townsville, 9, 11; Q. Duaringa; Rosewood, 3. Also from New Guinea.

## ADDÆA SUBTESSELLATA.

*Addæa subtessellata*, Wlk., Brit. Mus. Cat. xxxiv, p. 1201.

Q. Nambour; Brisbane, 1, 2, 3, 4, 5, 12; Mt. Tambourine, 3.

## ADDÆA SYMPHONODES n. sp.

[συμφωνωδης, harmonious.]

♂ ♀. 17-20 mm. Head, antennæ, thorax, and abdomen ochreous-whitish. Antennal joints slightly expanded at apices; ciliations in ♂ imperceptible. Face and palpi brownish; palpi obliquely ascending; terminal joint  $\frac{1}{4}$ . Legs ochreous-whitish; anterior pair and tarsi brownish with whitish annulations. Forewings triangular, costa straight or slightly concave for  $\frac{5}{6}$ , arched before apex, apex pointed, termen bowed, oblique; ochreous-whitish



with numerous fuscous-brown strigulations; an oblique fuscous-brown fascia from  $\frac{3}{5}$  costa to  $\frac{2}{5}$  dorsum, with a short rounded projection on posterior edge above middle, sometimes darker towards costa; an interrupted fine fuscous line close to termen; cilia brown-whitish. Hindwings with termen nearly straight; colour, strigulations, and fascia as forewings. Underside similar but brighter; with a second fascia on forewings at  $\frac{3}{4}$ , which is only faintly indicated on upperside.

Slightly variable. Nearest *A. subtessellata*, Wlk. Best distinguished by the posterior projection on median fascia.

Type in Coll. Turner.

N. Q. Kuranda, in September, October, and November; four specimens received from Mr. F. P. Dodd.

## FAM. PYRALIDÆ.

### SUBFAM. GALLERIANÆ.

#### **HYPLOPHOTA PHLOEOMIMA** n. sp.

[*φλοιομιμος*, imitating bark.]

♂ ♀. 20-27 mm. Head and thorax grey-whitish. Palpi, antennæ, and abdomen grey. Legs fuscous with some whitish scales; posterior pair mostly whitish. Forewings elongate-oval, costa moderately arched, apex rounded, termen obliquely rounded; grey mixed with whitish-grey and a few scattered fuscous scales; 9 from 8 before 7; two indistinct darker dentate antemedian lines; a linear blackish median discal dot, followed by a second similar dot, both oblique; postmedian line at  $\frac{4}{5}$ , obscure, finely dentate; a fine dentate subterminal line; a terminal series of blackish dots; cilia whitish-grey. Hindwings with termen slightly sinuate; pale-grey; cilia pale-grey.

Readily distinguished from *H. oödes* and *H. amydrastis* by the discal dots on forewings.

Type in Coll. Turner.

N.A. Port Darwin, in October and November; five specimens received from Mr. F. P. Dodd.

**HYPOLOPHOTA AGASTA** n. sp.

[ἀγαστος, admirable.]

♂ ♀. 31-32 mm. Head, palpi, and antennæ whitish. Thorax whitish, in ♂ greenish-tinged. Abdomen whitish-ochreous. Legs reddish-fuscous; posterior pair mostly whitish. Forewings elongate-oval, costa strongly arched, apex rounded, termen rounded, scarcely oblique; 9 from 8 before 7; reddish-fuscous, the greater part of disc suffused with whitish-green or whitish in ♂; in ♀ grey, without green suffusion, and with all markings less distinct; four or five parallel wavy transverse lines in basal  $\frac{1}{3}$ ; a transverse linear blackish discal dot; several curved wavy transverse lines in terminal  $\frac{1}{4}$  of disc; a terminal series of dark-fuscous dots; cilia whitish with pale-fuscous median line. Hindwings elongate, termen rounded; deep-yellow; cilia pale-yellow.

Type in Coll. Turner.

N.A. Port Darwin, ♀ in November. N.Q. Kuranda, ♂ type in November. Three specimens received from Mr. F. P. Dodd. Stannary Hills, one ♂ received from Dr. T. Bancroft.

**DOLOËSSA VIRIDIS.**

*Viridis*, Zel.

♂ ♀. 20-32 mm. Head, palpi, and antennæ whitish. Thorax green. Abdomen and legs whitish. Forewings elongate-oblong; costa strongly arched at base; thence nearly straight; apex rectangular; termen straight, rounded beneath; bright pea-green, but easily fading; markings pale-brownish; a basal costal spot; a circular median discal spot, another on dorsum at  $\frac{2}{5}$ , and a third between these, the last two connected by a narrow bridge; a curved line of similar but minute dots at  $\frac{4}{5}$ ; cilia green. Hindwings with termen rounded; white; cilia white.

N.Q. Cairns; Kuranda, 11, 12. Four specimens.

**HETEROMICTA PŒODES.**

Q. Rosewood, in September; one specimen closely resembling type.

**HETEROMICTA ALYPETA** n. sp.

[ἀλυπητος, cheerful.]

♂. 18 mm. Head, palpi, and antennæ whitish. Thorax whitish with some greenish scales; posterior crest dark-fuscous.

Abdomen pale-ochreous. Legs greenish-fuscescent; posterior pair suffused with whitish. Forewings elongate, costa slightly arched, apex rounded, termen obliquely rounded; 4 and 5 connate; greenish-fuscescent; central area occupied by a large purplish-brown blotch containing two darker discal dots; a dentate antemedian line slightly indicated; a finely dentate slender postmedian line from  $\frac{2}{3}$  costa, curved outwardly, and then inwardly to  $\frac{3}{4}$  dorsum; a dark-fuscescent interrupted terminal line; cilia greenish. Hindwings elongate, termen rounded; pale-ochreous; termen irrorated with greenish; cilia whitish with a greenish basal line.

Type in Coll. Turner.

Q. Rosewood, in September; one specimen.

#### SUBFAM. CRAMBINÆ.

### CRAMBUS HAPLORUS n. sp.

[ἀπλорος, simple.]

♀. 17 mm. Head, palpi, and thorax pale shiny-ochreous. Antennæ grey-whitish. Abdomen ochreous-whitish. Legs grey; posterior pair whitish. Forewings moderately elongate, costa gently arched, apex rounded, termen gently rounded, oblique; pale-ochreous with a shiny gloss; a blackish discal dot at  $\frac{3}{5}$ ; an obscure transverse series of minute blackish dots at  $\frac{5}{6}$ ; a terminal series of minute blackish dots; cilia ochreous-whitish. Hindwings with termen rounded; white; cilia white.

Nearest *C. leptogramellus* but smaller, forewings with apex rounded, not acute, and without streaks.

Type in Coll. Turner.

N.A. Port Darwin, in October; one specimen received from Mr. F. P. Dodd.

#### GEN. ANACLASTIS.

It is incorrect to state that vein 11 of the forewings is absent in this genus. Of the four veins 7, 8, 9, 10, two are absent by coincidence. It is absolutely a matter of taste which of these four be considered present, which absent, but vein 11 which arises separately from the cell is developed. (P.R.S.Q. 1904, p. 164.)

**PLATYTES SUBFUMALIS.**

*Talis subfumalis*, Hmps., P.Z.S. 1895, p. 968.

♂ ♀. 21-22 mm. Head brownish-fuscous. Palpi elongate (4); brownish-fuscous. Antennæ brownish-fuscous; ciliations in ♂ minute. Thorax brownish-fuscous; patagia with a central white stripe. Abdomen ochreous-grey. Legs fuscous; posterior pair ochreous-fuscous. Forewings narrow, costa slightly arched near base, then straight to apex, apex round-pointed, termen slightly oblique, rounded beneath; ochreous-brown, centre and termen suffused with fuscous; markings shining-white; a longitudinal subcostal streak from near base to  $\frac{1}{4}$ ; two more or less elongate spots or streaks in a line with this in the direction of mid-termen, the posterior with a short additional streak on its costal side; a similar interrupted line from near base parallel to dorsum; a terminal series of spots more or less elongate; cilia grey. Hindwings with termen rounded; grey; cilia grey.

N.A. Port Darwin, in November; two specimens received from Mr. F. P. Dodd.

**PLATYTES PHÆOCHORDA** n. sp.

[*φαιοχορδος*, dusky-lined.]

♂ ♀. 14-17 mm. Head white. Palpi very long (6); grey, inner surface whitish-grey. Antennæ grey, towards base whitish; ciliations in ♂ minute. Thorax and abdomen white. Legs whitish; tarsi and anterior tibiæ grey. Forewings elongate, costa gently arched, apex rounded, termen bowed, oblique; white; with fuscous streaks along veins, and a broader subcostal streak from base to apex; a narrow transverse dark-fuscous mark, margined with white, cutting subcostal streak at  $\frac{2}{3}$ ; a dark-fuscous terminal line extending round apex; cilia white, with a dark-fuscous line at  $\frac{1}{3}$ , apices grey. Hindwings with termen rounded; whitish; terminal edge narrowly fuscous; cilia white.

Type in Coll. Turner.

N.A. Port Darwin, in November; three specimens received from Mr. F. P. Dodd.

**GEN. UBIDA.**

The tongue is present in this genus, though not very strongly developed.

**UBIDA HETÆRICA** n. sp.

[ἑταιρικός, comrade-like.]

♀. 46 mm. Head brownish-ochreous. Palpi 5; pale brownish-ochreous, towards apex fuscous. Antennæ ochreous-whitish. Thorax pale brownish-ochreous; patagia darker. Abdomen ochreous-whitish. Legs ochreous-whitish; anterior pair pale-fuscous. Forewings elongate-oblong, costa gently arched [apex broken], termen rounded beneath; pale brownish-ochreous; a broad darker subcostal streak, leaving costal edge pale; a broad median pale stripe, bordered above and beneath by fuscous streaks, the dorsal edge giving off three acute teeth beyond cell, cutting the dorsal fuscous streak; cilia whitish. Hindwings with termen rounded; grey; cilia whitish.

Closely allied to *U. ramostricella*, Wlk., but differing much in coloration. The type (in Coll. Turner), otherwise perfect, has lost the apical portions of both forewings.

N.A. Port Darwin, in November; one specimen received from Mr. F. P. Dodd.

**CHILO AGLAOPIS** n. sp.

[ἀγλαωπὺς, brilliant.]

♂ ♀. 16-18 mm. Head orange-ochreous. Palpi moderate (3); orange-ochreous. Antennæ grey-whitish, towards apex grey; in ♂ thickened and shortly ciliated ( $\frac{1}{3}$ ). Thorax orange-ochreous; patagia shining-white. Abdomen whitish, dorsum towards base suffused with orange-ochreous. Legs whitish-ochreous; femora and posterior tibiæ whitish. Forewings elongate-triangular, costa gently arched, apex acute, termen straight, oblique; shining-white; an orange-ochreous streak along costa from base to apex; a similar dorsal streak, its upper edge rather irregular and slenderly margined with blackish; a dark-fuscous terminal line not extending to apex, cilia orange-ochreous. Hindwings with termen rounded, slightly sinuate; whitish; cilia whitish.

Type in Coll. Turner.

N.A. Port Darwin, in October and February; two specimens received from Mr. F. P. Dodd.



## DIPTYCHOPHORA POGONIAS n. sp.

[πωγωνίας, bearded.]

♂. 12-13 mm. Head, palpi, antennæ, and thorax pale-fuscous. Abdomen whitish irrorated with fuscous. Legs whitish; anterior pair pale-fuscous. Forewings triangular, costa gently arched, apex rounded, termen nearly straight, oblique, deeply incised at  $\frac{1}{3}$  from apex; whitish closely irrorated with pale-fuscous; antemedian line obsolete; a fine pale-fuscous line from  $\frac{2}{3}$  costa, curved outwards to approach near termen below incision, then inwardly curved to  $\frac{5}{8}$  dorsum; this is succeeded by a fine whitish line, and this again by a second fine pale-fuscous line; beyond this the terminal area is tinged with ochreous; a fine short oblique white streak from costa near apex, and a second at apex; a series of six or seven oblong black dots from tornus to incision; cilia fuscous with metallic reflections, interrupted by whitish at and below incision and at tornus. Hindwings with termen rounded; pale-fuscous; in ♂ with a strong tuft of pale-ochreous hairs from base of costa on upperside, extending to  $\frac{1}{2}$ ; cilia whitish with a pale-fuscous basal line.

Extremely similar to *D. ochracealis*, but at once distinguished by the bearded hindwings of ♂.

Type in Coll. Turner.

Q. Bunya Mountains, in December; four specimens.

## GEN. NEPHALIA nov.

[νηφαλιος, abstemious.]

Frons flat, not projecting. Tongue absent. Palpi long, porrect. Maxillary palpi triangularly dilated. Forewings with all veins present, 8 and 9 stalked, 11 running into 12. Hindwings with 4 and 5 short-stalked, 6 from upper angle of cell.

The absence of the tongue is very unusual in this subfamily, but the genus must be referred here. The well-marked pectination on median vein of hindwings forbids its reference to the Schœnobianæ. From *Ubida*, in which the tongue is not really basent, it differs in vein 11 running into 12, and in the ♂ antennæ not being pectinate.

**NEPHALIA CRYPSIMETALLA** n. sp.

[κρυψιμεταλλος, with hidden metal.]

♂. 16-20 mm. Head ochreous-whitish. Palpi fuscous irrorated with ochreous-whitish. Antennæ ochreous-whitish; in ♂ thickened and minutely ciliated ( $\frac{1}{5}$ ). Thorax ochreous-whitish irrorated with fuscous. Abdomen ochreous-whitish. Legs ochreous-whitish; anterior pair suffused with pale-fuscous. Forewings moderately elongate, costa gently arched, apex round-pointed, termen gently rounded, slightly oblique; ochreous-whitish more or less suffused with pale-fuscous and irrorated sparsely with dark-fuscous; a suffused darker median streak from base nearly to middle; a blackish discal dot at  $\frac{2}{3}$ ; a suffused dark subterminal line, thicker and more distinct toward tornus, with a leaden-metallic lustre; a terminal series of blackish dots; cilia ochreous-whitish with a pale-fuscous sub-basal line. Hindwings with termen rounded, slightly sinuate; whitish; a narrow fuscous terminal line not extending to tornus; cilia whitish, sometimes with a pale-fuscous sub-basal line.

Type in Coll. Turner.

N.A. Port Darwin, in December and February; two specimens received from Mr. F. P. Dodd.

**GEN. CHIONOBOSCA** nov.

[χιονοβοσκος, snow-clad.]

Frons with short truncate conical projection. Tongue present. Palpi long, porrect. Maxillary palpi triangularly scaled. Antennæ in ♂ thickened; ciliations imperceptible. Forewings with 7 separate, 8 and 9 stalked, 10 separate, 11 running into 12. Hindwings with 5 absent, 6 from upper angle of cell.

In the neighbourhood of *Chilo*. Sufficiently distinguished by the absence of 5 of hindwings, and anastomosis of 11 of forewings.

**CHIONOBOSCA ACTINOPIS** n. sp.

[ἀκτινωπης, shining.]

♂ ♀. 20-22 mm. Head fuscous-brown. Palpi elongate (5); fuscous-brown, beneath white. Antennæ fuscous; in ♂ much thickened, ciliations imperceptible. Thorax fuscous-brown; patagia

white. Abdomen whitish. Legs whitish; anterior and middle pairs with some fuscous suffusion. Forewings elongate, costa slightly arched, apex round-pointed, termen scarcely oblique, rounded beneath; shining white; well-marked costal and dorsal fuscous-brown streaks; cilia white, at apex and tornus fuscous-brown. Hindwings with termen rounded; white; cilia white. Underside dull-white.

Type in Coll. Turner.

N.A. Port Darwin, in December and February; two specimens received from Mr. F. P. Dodd.

#### GEN. DIADEXIA.

I was wrong in describing vein 6 of hindwings as arising from the upper angle of the cell (P.R.S.Q. 1905, p. 56). It arises well below the angle as in *Talis*, of which this genus is a derivative. I believe *Diadexia parodes* is the same species as *Surattha brunnea*, Hmps., which I have not seen described.

#### DIADEXIA ARGYROPASTA n. sp.

[ἀργυροπαστος, silver-sprinkled.]

♂♀. 13-15 mm. Head and thorax brown. Palpi long ( $4\frac{1}{2}$ ); brown, towards apex suffused with fuscous. Antennæ dark-fuscous finely annulated with white; in ♂ evenly bipectinate, apical  $\frac{1}{5}$  simple, pectinations 4. Abdomen fuscous. Legs fuscous; posterior pair ochreous-whitish. Forewings elongate, costa gently arched, apex rounded, termen straight, slightly oblique; brown, towards apex suffused with fuscous; a short silvery median streak from base; costal narrowly whitish to  $\frac{4}{5}$ , where is a white spot with some silvery scales; a circular white subcostal spot at  $\frac{3}{5}$ , connected with dorsum by some silvery scales; sometimes connected with costa by a whitish streak; a silvery white spot on dorsum at  $\frac{2}{5}$  succeeded by a blackish suffusion; a white dot on costa at  $\frac{1}{5}$  from which proceeds a silvery line at first outwards, then parallel with termen to before tornus; cilia silvery-white with a fuscous median line beneath apex. Hindwings with termen rounded; dark-grey; cilia grey.

Agrees with *Diadexia* in neuration, though not near specifically, and with different ♂ antennæ.

N.A. Port Darwin, in October and November; four specimens received from Mr. F. P. Dodd.

## GEN. MICROTALIS nov.

[μικρος, small; τάλis, a maiden.]

Frons flattened, without prominence. Tongue present but weakly developed. Labial palpi long, porrect. Maxillary palpi triangularly dilated. Forewings with all veins present, 7 separate, 8 and 9 stalked, 11 running into 12. Hindwings with 4 and 5 stalked, or 5 absent, 6 from well below angle of cell.

Differs from *Talis* in the absence of any frontal projection and in vein 11 running into 12.

Type *M. epimetalla*.

## MICROTALIS EPIMETALLA n.sp.

[ἐπιμεταλλος, overlaid with metal.]

♀. 10-12 mm. Head, palpi, antennæ, and thorax fuscous. Abdomen grey. Legs fuscous; tarsi annulated with whitish; posterior pair except tarsi whitish. Forewings elongate-triangular, costa rather strongly arched, apex rounded, termen bowed, oblique; fuscous mixed with whitish; an incomplete suffused median whitish fascia; a silvery discal dot at  $\frac{3}{5}$ ; a fine silvery transverse line at  $\frac{5}{6}$  bowed outwards above middle; a broad, interrupted, subterminal whitish fascia; cilia grey with silvery reflections. Hindwings with termen rounded; vein 5 absent; grey; cilia grey.

Type in Coll. Turner.

N.A. Port Darwin, in October; two specimens received from Mr. F. P. Dodd.

## MICROTALIS ACROCAPNA n.sp.

[ἀκροκαπνος, fuscous at the apex.]

♂. 16 mm. Head and thorax whitish irrorated with ochreous-fuscous. Palpi whitish irrorated with fuscous. Antennæ whitish with fuscous annulations. Abdomen whitish. Legs whitish; inner aspect of spurs fuscous. Forewings elongate-triangular, costa scarcely arched, apex acute, slightly produced, termen sinuate, oblique; whitish; obscurely streaked with brownish-ochreous mixed with dark-fuscous; a fine subcostal streak from base to  $\frac{1}{5}$ ; short fine oblique streaks from costa at  $\frac{1}{6}$  and  $\frac{1}{3}$ ; a broad irregular median streak from base giving off several suffused streaks dorsally, and

ending in 5 or 6 streaks<sup>3</sup> diverging towards termen; a fine line from beneath costa at  $\frac{2}{3}$  obliquely outwards almost to termen, then rounded and diverging from termen, but above tornus acutely angled and running into termen; a prominent triangular fuscous subapical spot on costa; an interrupted fuscous terminal line; cilia white, apices fuscous. Hindwings with termen sinuate; 4 and 5 stalked; whitish; cilia white.

Not closely allied to the preceding, but I think it must be placed in the same genus. The variations in 5 of hindwings occur also in *Talis*.

Type in Coll. Turner.

N.A. Port Darwin, in December; one specimen received from Mr. F. P. Dodd.

### TALIS TRISSOMOCHLA n. sp.

[τρισσομοχος, three-barred.]

♂. 13-17 mm. Head orange. Palpi moderate (3); orange. Antennæ whitish-grey; in ♂ thickened and minutely ciliated ( $\frac{1}{4}$ ). Thorax orange, with a white central stripe. Abdomen white, dorsum of basal segments and of base of tuft orange. Legs white; anterior pair pale fuscous. Forewings triangular, costa moderately arched, apex round-pointed, termen straight, rounded beneath, slightly oblique; markings silvery-white, narrowly edged with blackish; a streak along costa from near base to near middle, gradually diverging from costa and thickened, then abruptly curved upwards from near middle of disc to apex; a second straight broad streak from base beneath mid-line, ending abruptly shortly before termen; a third narrower streak along dorsum nearly to tornus; a fine blackish terminal line; cilia white, apices dark-fuscous. Hindwings with termen rounded; grey; cilia white.

Nearest *T. aurantiaca*, Meyr., but very distinct.

Type in Coll. Turner.

N.A. Port Darwin, in January and November; two specimens received from Mr. F. P. Dodd.



## SUBFAM. SCHENOBIANÆ.

## GEN. POGONOPTERA nov.

[πωγωνοπτερος, with bearded wings.]

Frons rounded, slightly projecting. Tongue present but weakly developed. Palpi very long, porrect. Maxillary palpi strong, dilated at apex. Antennæ in ♂ thickened and minutely ciliated. Tibiæ with outer spurs about half length of inner. Forewing of ♂ with tornus distorted and clothed with a tuft of long hair; 2 and 3 stalked from  $\frac{4}{5}$  cell, 4 and 5 connate from angle, 7, 8, 9 stalked, 11 free. Hindwing in ♂ with a long pencil of hairs from base on dorsum; 4 and 5 connate, 6 and 7 connate, 7 anastomosing very shortly with 8.

Sufficiently distinguished by the neuration, but also with unusual secondary male sexual characters.

## POGONOPTERA POLIOLEUCA n. sp.

[πολιολευκος, grey-white.]

♂. 20 mm. Head whitish. Palpi long (4); grey; inner surface white. Antennæ grey-whitish. Thorax grey. Abdomen and legs whitish. Forewings elongate-triangular, costa nearly straight, apex pointed, termen straight, oblique, crenulate, tornus in ♂ distorted and covered with long hairs, which on underside form a distinct tuft; grey; a broad dorsal white streak broadening to tornus; some scattered blackish scales above dorsal streak and in cell; towards termen some fine white streaks on veins finely irrorated with blackish scales; a strong blackish terminal line; cilia white. Hindwings with termen sinuate; white; a fine dark-fuscos terminal line; cilia white.

Type in Coll. Turner.

N.Q. Townsville; one specimen.

## DONACAULA CATOXODES.

*Donacula catoxodes*, Meyr.

N.Q. Kuranda, in April (Dodd).

**DONACAULA PENTAMITA** n. sp.

[πενταμιτος, five-threaded.]

♂ ♀. 14-16 mm. Head, thorax, and abdomen white. Palpi very long (5); white, outer surface fuscous. Antennæ white; in ♂ serrate with short ciliations ( $\frac{2}{3}$ ). Legs white; anterior pair fuscous on inner aspect. Forewings elongate, costa straight, apex rounded, termen bowed, rather strongly oblique; snow-white; with five fuscous streaks; first rather broad on costa from base to  $\frac{2}{3}$ ; second from base to costa at  $\frac{3}{4}$ ; third from fold at  $\frac{1}{6}$ , slightly bowed, running near second and touching it, or nearly so, beneath costa, ending on costa near apex; fourth from dorsum at  $\frac{1}{4}$  to apex; fifth from dorsum at  $\frac{3}{4}$  to apex; a fuscous terminal line; cilia white with a faint fuscous median line. Hindwings with termen rounded; snow-white; without markings, or exceptionally with faint subterminal and submarginal fuscous lines; cilia white.

Type in Coll. Turner.

N.A. Port Darwin, in October and November; five specimens received from Mr. F. P. Dodd.

**STYPHLOLEPIS SQUAMOSALIS.**

I have one example of this fine species (♀) which differs in neururation from that given by Hampson (P.Z.S. 1895, p. 912). In the forewings veins 6 and 7 are not stalked, but are well separated at origin. In the hindwing vein 7 does not anastomose with 8, though closely applied to it for a short distance.

**SCHÆNOBIUS CHIONOTUS.**

*Schænobius chionotus*, Meyr., Tr. E.S. 1889, p. 519.

N.A. Port Darwin (Dodd). Also from New Guinea.

## SUBFAM. CHRYSAUGINÆ.

**CURICTA CÆLOCROSSA** n. sp.

[κοιλοκροστος, with hollowed margin.]

♂ ♀. 36-43 mm. Head whitish-ochreous. Palpi ascending, in ♂  $2\frac{1}{2}$ , in ♀ 4, second joint in ♀ very elongate; brownish-ochreous with some fuscous irroration. Antennæ and thorax ochreous-grey. Abdomen ochreous-grey at base; dorsum suffused with fuscous;

underside and apex ochreous-whitish with reddish suffusion. Legs whitish-ochreous mixed with fuscous and reddish. Forewings subtriangular, costa strongly arched at base, then slightly concave, apex acute, termen deeply concave beneath apex, with a strong rounded projection on vein 4, thence straight to tornus; in ♂ with a subcostal tuft of pale-ochreous hairs beneath near base; reddish-grey, in ♀ greenish-grey; a faintly marked slender outwardly curved line from  $\frac{1}{3}$  costa to  $\frac{1}{3}$  dorsum; a similar strongly sinuate line from  $\frac{4}{5}$  costa to before tornus; sometimes with a reddish-fuscous spot on it near dorsum; a similar faint subterminal line; some reddish-fuscous suffusion on termen beneath apex; cilia ochreous-whitish. Hindwings with termen rounded, sinuate beneath apex; fuscous; a reddish-terminal band; cilia ochreous-whitish, apices reddish.

Type in Coll. Turner.

N.Q. Kuranda, in June and December; two specimens received from Mr. F. P. Dodd.

#### SUBFAM. PYRALINÆ.

#### ENDOTRICA LOBIBASALIS.

*Endotricha lobibasalis*, Hmps.

♂. 20-24 mm. Head, palpi, and thorax ochreous-grey; patagia in ♂ slender and much elongate, reaching mid-abdomen. Antennæ ochreous-whitish; in ♂ slightly dentate, ciliations 1. Abdomen ochreous-grey with some fuscous scales. Legs whitish-ochreous with some fuscous scales. Forewings triangular, costa sinuate, with a strong projecting crest at  $\frac{1}{5}$ , rather strongly excavated before apex, apex pointed, termen sinuate, scarcely oblique; ochreous-grey; a grey discal dot beneath costa at  $\frac{2}{3}$ ; a few grey scales towards base; a slender straight pale submarginal line; a slender fuscous terminal line; cilia pale-reddish. Hindwings with termen rounded; ochreous-grey; an elongate-oval central ochreous blotch as far as middle; cilia whitish with a reddish-fuscous basal line. Underside of forewings with an elongate patch of ochreous scales above dorsum; of hindwings with a general fuscous irroration, and a dentate fuscous postmedian transverse line.

N.Q. Kuranda, in July, October, and November; four specimens received from Mr. F. P. Dodd.

**ENDOTRICHA PYRRHOCOSMA** n. sp.[*πυρροκοσμος*, adorned with purple-red.]

♂. 18 mm. Head, palpi, thorax, and abdomen whitish-ochreous. Antennæ ochreous-whitish; ciliations in ♂ rather long ( $1\frac{1}{2}$ ). Legs whitish-ochreous with fuscous irroration. Forewings elongate-triangular, costa slightly concave, arched towards apex, apex pointed, termen slightly bowed, oblique; pinkish-grey; a darker basal area, bordered by some dark-fuscous scales at  $\frac{1}{4}$ , and succeeded by a pale-ochreous suffusion; a dark-fuscous discal dot beneath mid-costa; costa obscurely strigulated with whitish-ochreous; a whitish submarginal line from costa, soon lost in disc; a slender interrupted fuscous terminal line; cilia pinkish mixed with fuscous. Hindwings with termen rounded; as forewings but basal patch bright reddish-purple. Underside similar; hindwings without basal patch, but with a fuscous postmedian line edged with whitish.

♀. 20 mm. Differs in greater obscurity of markings and absence of reddish-purple basal patch on hindwings.

Type in Coll. Turner.

N.Q. Kuranda, in October; three specimens, one ♂, two ♀, received from Mr. F. P. Dodd.

**ENDOTRICHA MELANCHROA** n. sp.[*μελαγχροος*, dark.]

♀. 17-20 mm. Head, palpi, antennæ, thorax, and abdomen fuscous. Legs fuscous; tarsi annulated with whitish; posterior pair and central part of middle tibiæ whitish above. Forewings elongate-triangular, costa straight nearly to apex, apex rounded, termen bowed, slightly oblique, fuscous; a dark-fuscous basal patch limited by a suffused whitish line from  $\frac{1}{4}$  costa to  $\frac{1}{3}$  dorsum, slightly dentate beneath costa and below middle; some minute whitish costal dots; cilia fuscous with a darker basal line. Hindwings with termen rounded; pale-fuscous; cilia pinkish-white with a fuscous basal line.

In the forewing 11 anastomoses at a point with 12, an exceptional character in this genus, from which it may later be separated; 4 and 5 are stalked in both wings.

Type in Coll. Turner.

N.A. Port Darwin, in December; two specimens received from Mr. F. P. Dodd.

**SCENIDIOPIS IOCHYTA** n. sp.[*ιοχυτος*, suffused with violet.]

♀. 18 mm. Head, palpi, and thorax dark-fuscous with a few purple-reddish scales. Antennæ dark-fuscous. Abdomen dark-fuscous with a few purple-reddish scales, bases of segments whitish. Legs dark-fuscous; tarsi annulated with whitish; posterior pair partly suffused with whitish. Forewings elongate-triangular, costa straight to near apex, apex rounded, termen bowed, oblique; dark-fuscous irrorated with purple-reddish; markings white; a conspicuous line from  $\frac{1}{4}$  costa to  $\frac{1}{4}$  dorsum, slightly outwardly curved; second line from  $\frac{5}{6}$  costa, soon narrowing and twice sinuate to  $\frac{5}{6}$  dorsum; three white dark-centred dots on costa between lines; a dark white-centred median discal dot; cilia fuscous, bases darker, towards tornus interrupted by whitish. Hindwings with termen rounded; as forewings but purple-reddish irroration more conspicuous posteriorly; first line slender, sinuate; second line crossing mid-disc, sharply dentate. Underside similar but first line less marked, second line dentate in both wings, white dots on basal part of costa of forewings.

Type in Coll. Turner.

N.A. Port Darwin, in December; one specimen received from Mr. F. P. Dodd.

**GEN. TANYETHIRA** nov.[*τάνυεθιρος*, long-haired; in allusion to the antennæ.]

Frons flat. Tongue well developed. Palpi rather slender, ascending, not reaching or barely reaching vertex. Maxillary palpi short, filiform. Antennæ in ♂ with very long ciliations. Forewings with 4 and 5 closely approximated for some distance, or stalked. Hindwings with 4 and 5 closely approximated for some distance.

Type: *Endotricha duplicilinea*, Hmps.

Allied to *Gauna* and *Curena*, the former distinguishable by the peculiar palpi, the latter by 4 and 5 of forewings not being closely approximated for some distance.



**TANYETHIRA DUPLICILINEA.**

*Endotricha duplicilinea*, Hmps., Ill. Het. ix, p. 159, Pl. 171, f. 21; Moths Ind. iv, p. 136.

♂ ♀. 13-16 mm. Head, palpi, antennæ, thorax, and abdomen pale ochreous-brown. Antennal ciliations in ♂ extremely long (8). Legs pale brownish-ochreous. Forewings triangular, costa straight, gently arched shortly before apex, apex pointed, termen slightly bowed, oblique; 4 and 5 closely approximated for some distance; pale ochreous-brown; two oblique paler lines; first from  $\frac{1}{3}$  costa to  $\frac{1}{3}$  dorsum limiting a rather darker basal area; second from  $\frac{5}{6}$  costa to  $\frac{2}{3}$  dorsum; a dark-fuscous discal dot beneath costa before middle; costa between lines with pale strigulations; cilia ochreous-whitish with a dark basal line. Hindwings with termen nearly straight; like forewings but rather paler; second line from  $\frac{2}{3}$  costa; cilia without basal dark line. Underside similar but lines less distinct.

N.A. Port Darwin, 1. N.Q. Cairns, 7; Kuranda, 10, 12; four specimens. Also from Ceylon.

**TANYETHIRA HEMICNECA** n. sp.

[ἐμικνήκος, half-yellowish.]

♀. 20-21 mm. Head and palpi fuscous. Antennæ whitish-ochreous. Thorax whitish-ochreous mixed with fuscous. Abdomen dark-fuscous. Legs fuscous mixed with whitish-ochreous. Forewings triangular, costa straight to near apex, apex rounded, termen bowed, oblique; pale-fuscous; a suffused darker basal patch; 4 and 5 stalked; a dark-fuscous discal dot beneath costa before middle; two suffused dark oblique lines from before apex to dorsum beyond middle; cilia pale-fuscous with a whitish-ochreous basal line. Hindwing with termen rounded; pale-ochreous; two nearly approximated, interrupted, postmedian, fuscous lines; followed by a fuscous suffusion, absent towards tornus; a fuscous terminal line; cilia as forewings. Underside similar; hind wings with a dark-fuscous discal dot beneath costa before middle.

Type in Coll. Turner.

N.Q. Kuranda, in July and October; two specimens received from Mr. F. P. Dodd.

## GEN. ARESOPTERA nov.

[ἀρεσκοπτερος, with pleasing wings.]

Frons flat. Tongue well developed. Palpi slender, cylindrical, ascending, moderately long but not reaching vertex, apex truncate. Antennæ in ♂ with moderately long ciliations. Maxillary palpi short, filiform. Forewings with 4 and 5 connate, immediately diverging, 7, 8, 9 stalked, 10 and 11 free. Hindwings with 4 and 5 connate, immediately diverging, 7 anastomosing with 8 for some distance.

In structure this approaches *Persicoptera*, but in that genus 11 anastomoses with 12, and the palpi are much shorter, with second joint considerably thickened.

## ARESOPTERA IDIOTYPUS n. sp.

[ιδιοτυπος, with peculiar markings.]

♂. 14-15 mm. Head whitish. Face whitish with a transverse fuscous line near upper edge. Palpi  $1\frac{1}{2}$ ; whitish, apices of joints fuscous. Antennæ whitish; ciliations in ♂ 2. Thorax whitish. Abdomen dark-fuscous mixed with whitish. Legs ochreous-whitish irrorated, and tarsi annulated, with dark-fuscous; anterior coxæ pinkish-tinged. Forewings triangular, costa straight to near apex, then strongly arched, apex rounded, termen slightly bowed, oblique; whitish; a large pale-grey basal patch, posterior edge sharply defined, indented below middle, from  $\frac{2}{5}$  costa to  $\frac{2}{5}$  dorsum; a dark-fuscous, rather large, apical spot; a rounded grey terminal blotch, toward edge suffused with dark-fuscous; a dark-fuscous discal dot beneath mid-costa; an interrupted fuscous terminal line; cilia whitish with some fuscous scales. Hindwings with termen gently rounded; pinkish-white; a fuscous postmedian transverse line, twice sinuate; an interrupted fuscous terminal line; cilia whitish with some fuscous bars, apices pinkish. Underside similar, but forewings suffused with fuscous, with a whitish subapical bar from costa.

Type in Coll. Turner.

Q. Eumundi, near Nambour, 10; Brisbane. Two specimens.

## GEN. APOBLEPTA nov.

[ἀποβλεπτος, admired.]

Frons flat. Tongue present but weakly developed. Palpi ascending, smooth-scaled, cylindrical, not reaching vertex. Apex of terminal joint acute. Maxillary palpi minute, filiform. Antennæ in ♂ thickened, ciliations minute. Forewings with 4 and 5 approximated for some distance, 7, 8, 9 stalked. Hindwings with 4 and 5 well separated at origin, 8 anastomosing with cell beyond middle and with 7 nearly to apex.

## APOBLEPTA EPICHARIS n. sp.

[ἐπιχαρις, pleasing.]

♂ 18 mm., ♀ 39 mm. Head and face white. Palpi dark-fuscos; anterior surface and apex white. Antennæ white; in ♂ thickened, ciliations minute. Thorax and abdomen white. Legs white; anterior tibiæ dark-fuscos at base and apex; posterior tarsi with dark-fuscos spots. Forewings elongate, costa gently arched, apex rectangular, termen strongly bowed, slightly oblique; white partly suffused with whitish-grey; a fuscous dot on costa at  $\frac{1}{3}$ ; a fuscous line from costa at  $\frac{4}{5}$ , outwardly bowed, interrupted by a longitudinal oval brownish-ochreous spot in middle, ending on  $\frac{2}{3}$  dorsum; this is followed by a parallel suffused pale-grey line; a fuscous line close to termen; cilia grey mixed with white. Hindwings with termen slightly sinuate beneath apex, strongly bowed above middle; as forewings but postmedian line traceable towards costa only, no ochreous spot.

Type in Coll. Turner.

N.Q. Kuranda, in April; one specimen received from Mr. F. P. Dodd. Evelyn Scrub near Herberton, in February and November; three specimens from the same collector.

## GEN. ANALCINA nov.

[ἀναλκινος, weak.]

Frons flat. Tongue well developed. Palpi ascending, thickened with rough hairs, reaching vertex; apex of terminal joint rather obtuse. Antennæ in ♂ with tufts of long cilia. Maxillary palpi

moderate, hairy. Forewings with 2 from cell, 3 and 4 stalked, 5 absent (coincident with 4), 7, 8, 9, 10, 11 stalked. Hindwings with 3 and 4 well separated at origin, 5 absent, 7 anastomosing strongly with 8.

Allied to *Cangetta* and *Petta*. In the latter genus I think 4 and 5 are coincident, 2 present but stalked with 3, 4.

### ANALCINA PENTHICA n. sp.

[πενθικός, mournful.]

♂ ♀. 10 mm. Head, palpi, thorax, and abdomen fuscous. Antennæ ochreous-whitish annulated with fuscous, ciliations in ♂ 4. Legs ochreous-whitish; anterior pair, lower half of middle femora, and upper half of middle tibiæ fuscous. Forewings elongate-triangular, costa straight to near apex, apex rounded, termen nearly straight, slightly oblique; fuscous; two ochreous-whitish transverse lines; first slightly before middle, straight; second at  $\frac{3}{4}$ , slightly irregular; cilia fuscous. Hindwings with termen gently rounded; pale-fuscous; an ill-defined pale subterminal line; cilia pale-fuscous.

Type in Coll. Turner.

N.Q. Kuranda, in September, October, and April; three specimens received from Mr F. P. Dodd.

### GEN. CANGETTA.

*Cangetta*, Moore, Lep. Ceyl. iii, p. 214; Hmps., Tr. E.S. 1896, p. 487.

Forewings with the cell short ( $\frac{1}{3}$ ); 3, 4, 5 stalked, 7, 8, 9, 10, 11 stalked. Hindwings with the cell very short ( $\frac{1}{5}$ ); 4 and 5 long-stalked, 7 anastomosing with 8 for some distance.

### CANGETTA RECTILINEA.

*Cangetta rectilinea*, Moore, Lep. Ceyl. iii, p. 314, Pl. 182, f. 3; Hmps., Moths Ind. iv, p. 137.

N.A. Port Darwin, 1. N.Q. Kuranda, 10. Also from Ceylon.

### GEN. ACICYS nov.

[ἀκικυς, feeble.]

Frons rounded. Tongue well developed. Palpi ascending, not reaching vertex; second joint somewhat rough-scaled anteriorly;

terminal joint smooth, slender, acute. Maxillary palpi minute, filiform. Forewings with 3, 4, 5 connate from lower angle of cell, 6 separate at origin, 7, 8, 9, 10 stalked. Hindwings with 3, 4, 5 connate from angle of cell, 7 anastomosing strongly with 8.

Allied to *Cangetta* but more primitive in its neuration.

### ACICYS CLADAROPA n. sp.

[κλαδαρωπος, of fragile appearance.]

♂. 14 mm. Head and thorax white. Palpi white; second joint with a fuscous anterior dot at base and apex. Antennæ white. Abdomen white with some greyish suffusion. Legs white. Forewings elongate-triangular, costa straight to near apex [apex broken], termen slightly bowed, oblique; white suffused with pale-grey; an oblique fuscous line from costa before apex to  $\frac{2}{3}$  dorsum; several fuscous terminal dots beneath apex; cilia white. Hindwings with termen rounded; white; a greyish suffusion near base towards dorsum; a large fuscous subterminal blotch; a fuscous terminal line; cilia white.

Type (in poor condition) in Coll. Turner.

N.Q. Kuranda, in November; one specimen received from Mr. F. P. Dodd.

### GEN. HENDECASIS.

*Hendecasis*, Hmps., Moths Ind. iv, p. 140; Tr. E.S. 1896, p. 493.

Frons flat. Tongue present. Palpi porrect, long (over 2), longer in ♀ than ♂; second joint in ♂ thickened. Maxillary palpi in ♂ covered with a tuft of long expansile hairs; in ♀ triangularly scaled. Antennal ciliations in ♂ very short. Forewings with 7 absent (coincident with 8), 8, 9, 10 stalked. Hindwings with 3 and 4 stalked, 5 arising separately, 7 anastomosing with 8 for some distance.

Type: *H. duplifascialis*, Hmps. The stalking of 3 and 4 of the hindwings may be peculiar to the species described below, as Hampson does not allude to it.

### HENDECASIS MELALOPHALIS.

*Hendecasis melalophalis*, Hmps.

♂♀. 9-11 mm. Head, palpi, antennæ, and thorax white. Abdomen white, with a large dark-fuscous spot on dorsum of third



segment. Legs whitish; tarsi with one or two dark-fuscous annulations; spurs sometimes partly dark-fuscous. Forewings elongate-triangular, costa gently arched, apex rounded, termen obliquely rounded; white with some faint grey suffusion; a dark-fuscous dot on costa at  $\frac{1}{3}$ , giving rise to an outwardly curved grey line to  $\frac{1}{4}$  dorsum; a second line, less curved, from  $\frac{2}{3}$  costa to before tornus; a fuscous terminal line; cilia fuscous. Hindwings with termen rounded; as forewings but first line straight, terminating in a dark-fuscous dorsal dot, second line to  $\frac{2}{3}$  dorsum, approaching first.

N.Q. Kuranda, in September; three specimens received from Mr. F. P. Dodd.

### TRICHOPHYSETIS POLIOCHYTA n. sp.

[πολιοχυτος, suffused with grey.]

♂. 13-14 mm. Head whitish; face fuscous. Palpi dark-fuscous, internal surfaces whitish; labial palpi  $2\frac{1}{2}$ , maxillary 1. Thorax and abdomen whitish tinged with greenish-ochreous. Legs whitish. Forewings triangular, costa moderately arched, apex rounded, termen strongly bowed, scarcely oblique; vein 10 separate; grey, towards base and costa whitish; a greenish-ochreous outwardly curved line from  $\frac{1}{3}$  costa to  $\frac{1}{4}$  dorsum; a greenish-ochreous suffusion on apical area, prolonged as a line along upper  $\frac{2}{3}$  of termen; cilia whitish. Hindwings with termen rounded; grey; extreme base and a narrow terminal band whitish; oblique dark transverse lines at  $\frac{1}{4}$  and middle; cilia dark-grey.

Type in Coll. Turner. In the common *T. cretacea* vein 10 of forewings is stalked.

N.Q. Kuranda, in September and October; two specimens received from Mr. F. P. Dodd.

### HERCULIA CHYTRIODES n. sp.

[χυτρεωδης, like earthenware.]

♂♀. 17-24 mm. Head, palpi, thorax, and abdomen ochreous-whitish suffused with dull reddish-purple. Antennæ ochreous-whitish narrowly annulated with dull-reddish; ciliations in ♂  $1\frac{1}{2}$ . Legs ochreous-whitish densely irrorated with dull reddish-purple; posterior pair paler. Forewings triangular, costa gently arched, apex rounded, termen bowed, oblique; ochreous-whitish suffused

with dull reddish-purple; a pale transverse line at  $\frac{1}{4}$ ; a dark discal spot beneath mid-costa; a pale line from  $\frac{3}{4}$  costa to  $\frac{3}{4}$  dorsum, internally dark-edged, usually slightly bent outwards in middle; cilia dull reddish-purple, bases whitish, with darker sub-basal and subapical lines. Hindwings with termen rounded; colour as forewings but rather paler; slender, darker near base and beyond middle, cilia as forewings.

Type in Coll. Turner.

N.A. Port Darwin, in November and January; four specimens received from Mr. F. P. Dodd.

## FAM. PTEROPHORIDÆ.

### ALUCITA LEUCOPHASMA n. sp.

[λευκοφασμα, a white spectre.]

♂ ♀. 16-18 mm. Head white with some grey scales; face ochreous-whitish. Palpi and antennæ white. Thorax and abdomen white. Legs, anterior pair fuscous; middle pair white annulated with fuscous; posterior pair white. Forewings cleft to middle; white with some fuscous scales; a broad fuscous streak along costa, thickened at  $\frac{1}{4}$ , and giving off a transverse streak across base of cleft, but not reaching dorsum; first segment irrorated and suffused with fuscous, especially at base; second segment with a fuscous dot at  $\frac{3}{4}$  and some scattered fuscous scales; cilia white, interrupted by grey. Hindwings cleft at  $\frac{1}{3}$  and to near base; grey; cilia white, on costa of first segment grey.

This is the first described indigenous species, the three preceding being Indo-Malayan. There are, however, four indigenous species in New Zealand.

Type in Coll. Turner.

Q. Mount Tambourine, in November and March; four specimens.

## FAM. ZEUZERIDÆ.

### XYLEUTES ZOPHOPLECTA.

*Xyleutes zophoplecta*, Turn., Tr. R.S.S.A. 1902, p. 202.

This species is figured by Rothschild (Nov. Zool. 1903, Pl. xi, f. 10).

**XYLEUTES NEPHOCOSMA.**

*Xyleutes nephocosma*, Turn., Tr. R.S.S.A. 1902, p. 201.

*Xyleutes molitor*, Roths., Nov. Zool. 1903, p. 307, Pl. xi, f. 13.

**XYLEUTES DODDI.**

*Xyleutes doddi*, Roths., Nov. Zool. 1903, p. 306, Pl. xi, f. 11.

*Xyleutes coscinota*, Turn., Tr. R.S.S.A. 1903, p. 24.

I have received this species also from Port Darwin.

In this and the following instance I believe Mr. Rothschild's names have priority.

**XYLEUTES STRIGA.**

*Xyleutes striga*, Roths., Nov. Zool. 1903, p. 307, Pl. xi, f. 12.

*Xyleutes acontucha*, Turn., Tr. R.S.S.A. 1903, p. 25.

**XYLEUTES POLYPLOCA** n. sp.

[*πολυπλοκος*, intricate.]

♂ ♀. 44-48 mm. Head whitish-grey, margins blackish. Palpi blackish. Antennæ whitish-grey. Thorax grey, sides whitish-grey; a V-shaped blackish mark, its angle rounded, extending whole length of dorsum. Abdomen grey. Legs grey. Forewings elongate, costa strongly arched, apex rounded, termen very obliquely rounded; pale-grey with blackish strigulations and patches of darker grey, which are better marked in ♀; a basal patch extending to  $\frac{2}{5}$  costa and to  $\frac{1}{3}$  dorsum; a subtriangular small patch on costa at about  $\frac{2}{3}$ ; another on dorsum beyond middle; sometimes an elongate patch in disc between these two; some blackish reticulations near termen; cilia whitish-grey barred with dark-grey. Hindwings with termen slightly sinuate; pale-grey with indistinct darker strigulations towards termen; cilia as forewings.

Type in Coll. Turner.

N.A. Port Darwin, in November; two specimens received from Mr. F. P. Dodd.

**XYLEUTES PHÆOCOSMA** n. sp.

[*φαιocosμος*, with dusky ornament.]

♂ ♀. 114-184 mm. Head grey. Palpi blackish; second joint whitish beneath. Antennæ in ♂ blackish, in ♀ grey. Thorax grey,

a large dorsal V-shaped blackish patch. Abdomen blackish; base, terminal segments, and under-surface grey; third and fourth segments in ♂ narrowly whitish at base. Legs grey; tarsi blackish. Forewings elongate, costa rather strongly arched, apex rounded, termen nearly straight, strongly oblique; whitish densely irrorated with dark-fuscous; several dark-fuscous suffused patches in disc before and beyond middle; a series of blackish dots on veins in costal part of disc; an oblique black stripe, with surrounding black reticulation, from apex; cilia very short, black, apices white. Hindwings with termen slightly sinuate in ♂, more rounded in ♀; blackish; in ♂ grey along termen and terminal ends of veins; cilia as forewings.

Type in Coll. Turner.

N.A. Port Darwin, in November and December; three specimens received from Mr. F. P. Dodd.

#### **XYLEUTES STENOPTILA** n. sp.

[*στενοπτιλος*, narrow-winged.]

♂. 122 mm. Head, thorax, and abdomen whitish intimately mixed with fuscous so as to appear grey. Palpi anteriorly whitish, posteriorly dark-fuscous. Antennæ whitish, pectinations dark-fuscous. Legs grey, anterior pair more whitish. Forewings narrow-elongate, costa first straight then moderately arched, apex round-pointed, termen straight, very oblique, dorsum strongly sinuate; whitish finely irrorated with fuscous-grey; suffused darker markings; a blotch on costa at  $\frac{1}{4}$  and another on middle, ill-defined, connected in disc; a broad streak from beneath apex to above dorsum, narrower at extremities; cilia grey-whitish. Hindwings with termen nearly straight; grey; base of costa whitish; base, dorsal area, and a band along termen irrorated with whitish; cilia as forewings.

Type in Coll. Turner.

N.Q. Stannary Hills; one specimen received from Dr. T. Bancroft.

#### **XYLEUTES METHYCHROA** n. sp.

[*μεθυχροος*, wine-tinged.]

♂ 64 mm., ♀ 96 mm. Head, palpi, antennæ, thorax, and abdomen grey; thorax in ♂ with a blackish V-shaped mark, its

posterior extremities thickened. Legs grey; tarsi fuscous with whitish annulations. Forewings elongate-oval, costa strongly arched, apex rounded, termen very obliquely rounded; whitish-grey tinged with purplish, coarsely reticulated with darker-grey; cilia whitish-grey barred with darker-grey. Hindwings elongate, termen sinuate; fuscous; cilia as forewings.

Easily distinguished by the purplish tinge of the wings.

N.Q. Herberton, in December and February; two specimens received from Mr. F. P. Dodd.

## FAM. HEPIALIDÆ.

### ONCOPTERA MITOCERA n. sp.

[μιτοκερος, thread-horned.]

♂ 32-46 mm., ♀ 43-56 mm. Head and thorax reddish-brown; in ♀ grey-brown. Palpi fuscous. Antennæ  $\frac{1}{8}$  to  $\frac{1}{10}$ , filiform, apical segments very slightly larger than basal; brownish-fuscous. Abdomen fuscous. Legs ochreous; posterior tibiæ in ♂ with a long broad tuft of curled hair from base, lying along abdomen. Forewings reddish-brown, in ♀ dark-brown, more or less marbled with pale-fuscous; sometimes with scattered whitish fuscous-edged spots; cilia reddish-brown barrel with fuscous. Hindwings fuscous; with an ochreous-whitish patch at apex; cilia fuscous with a few ochreous-whitish scales.

I have a ♂ aberration with a whitish line from base to tornus, joined there by an oblique fusiform whitish streak, towards but not reaching apex. From the type species *mitocera* differs in the antennæ not being club-shaped, though they have a slight tendency to dilatation.

Type in Coll. Turner.

N.Q. Kuranda, 4, 5; Atherton; Herberton, 1. A series received from Mr. F. P. Dodd.

## FAM. EUPTEROTIDÆ.

### EUPTEROTE DODDI n. sp.

♂. 96-128 mm. Face, palpi, thorax, abdomen, and legs concolorous with wings, but crown of head paler and sometimes whitish.



Antennæ whitish; pectinations 8. Forewings broadly triangular, costa moderately arched to  $\frac{4}{5}$ , then very strongly arched to apex, apex rectangular, termen slightly bowed, scarcely oblique; ochreous, brownish, fuscous, or reddish; a small pale circular spot in disc at  $\frac{1}{3}$  and at  $\frac{1}{3}$  from costa; costa sometimes with some whitish suffusion; indications of a dark wavy transverse line before discal spot; four or five wavy dark lines beyond middle, often obsolete; a strongly marked line from  $\frac{5}{6}$  costa to  $\frac{4}{5}$  dorsum, slightly bisinuate, closely preceded by a parallel fainter line; a strongly and coarsely crenated subterminal line, the space between it and preceding line sometimes suffused with grey; cilia concolorous. Hindwings with termen round, tornal angle rather prominent; colour as forewings but paler; a nearly straight transverse line before middle, sometimes double; two parallel straight postmedian dark lines; subterminal line as in forewings; cilia concolorous.

♀. 116-144 mm. Usually paler in colour. Forewings narrower, with apex acute and produced.

Type in Coll. Turner.

N.Q. Evelyn Scrub, near Herberton, from October to January; a series bred by Mr. F. P. Dodd, to whom we owe most of our knowledge of the rich lepidopterous fauna of the Cairns-Herberton district. Some years ago Mr. Dodd sent me two female examples taken at Kuranda.

An allied species, *E. styx*, B-Bak., Nov. Zool. 1908, p. 176, is found in New Guinea.

#### GEN. AXIOCLETA nov.

[ἀξιόκλητος, worth choosing.]

Tongue absent. Palpi short, hairy, porrect. Antennæ bipectinate to apex in both sexes, pectinations long in ♂, short in ♀. Head and thorax densely hairy. Abdomen in ♂ with a short tuft, in ♀ with a large rounded tuft. Posterior tibiae with two pairs of spurs. Forewings with vein 2 from  $\frac{3}{5}$ , 3 from well before angle, 4 from angle, 5 from middle of cell, 6 from upper angle, 7, 8, 9, 10 stalked, 9 from 8 before 7, 11 from  $\frac{3}{4}$ , free. Hindwings with 2 from  $\frac{3}{5}$ , 3 from well before angle, 4 from angle, 5 from middle of cell, 6 and 7 stalked from upper angle, 8 closely approximated to cell near base but not connected.

Type *A. perisema*. Closely allied to *Arcturus*, Curtis, in which 8 of hindwings anastomoses strongly with the cell.

**AXIOCLETA PERISEMA** n. sp.

[περισημος, distinguished.]

♂. 40-48 mm. Head and thorax white. Palpi blackish. Antennæ white; pectinations 10, whitish-ochreous. Abdomen white, basal segments often with broad transverse bands of brilliant red, two blackish penultimate transverse lines, tuft ochreous. Legs white; anterior pair anteriorly dark-fuscous. Forewings triangular, costa gently arched, apex rounded, termen obliquely rounded; snow-white; without markings, or with a fuscous erect mark from dorsum at  $\frac{1}{3}$ , and a sinuate interrupted fuscous line from beneath costa before apex to  $\frac{2}{3}$  termen; cilia white. Hindwings with termen rounded; snow-white; cilia white.

♀. 44-54 mm. Palpi white. Antennal pectinations 1. Forewings without markings. Abdomen without red bands, and with only one penultimate transverse blackish line; tuft voluminous, whitish-ochreous.

A beautiful species curiously variable.

Types in Coll Turner.

N.Q. Evelyn Scrub (3,500 ft.) near Herberton, in December and January; a series bred by Mr. F. P. Dodd.

**Note on Localities.**

Having recently visited the Cairns-Herberton district, I am able to give some notes on localities, which may be useful. The town of Cairns is situated on a low sandy coastal plain, largely occupied by tea-tree (*Melaleuca*) swamps. A few miles from the coast the hills arise abruptly, covered by dense tropical jungle locally known as "scrub." Kuranda, just above the Barron Falls, is some 15 miles from Cairns and about 4 miles from the coast. It is at an altitude of 1,000 feet, but many of the insects from this locality have been collected in the Barron Gorge some 700 or 800 feet below. I think, therefore, it must be considered as only a part of the Cairns locality. Immediately behind Kuranda the hills rise to 2,000 feet, but I think little collecting has been done at the higher levels. The whole of this district must be considered from an entomological point of view as an island of the Malayan Archipelago.

Some 10 miles on the railway from Kuranda one passes abruptly into poor thin Australian forest of eucalypts, wattles, proteaceous shrubs, grass-trees, &c. In this plain is the township of Mareeba. Proceeding southwards the railway skirts the great Atherton Scrub, a dense tropical jungle with large timber at an elevation of 2,500 feet. Leaving this, in another 20 miles one enters the granite hills of Herberton with a typical Australian flora, and many Oecophoridæ and Geometridæ of southern types at an elevation of 3,000 feet. Again, within 10 miles of Herberton is the Evelyn Scrub, a tropical forest at 3,500 feet with many peculiar forms. It is not possible to regard this as a separate locality from Herberton, as the tropical jungle and Australian forest country are so intermixed. Indeed this occurs all over the coastal districts of Queensland, the insects of "scrub" and "forest" country being largely different—the former mostly Malayan, the latter Australian—though representatives of both faunas have intruded into each other's territory. Such differences of locality occurring in close juxtaposition are an interesting study for local naturalists, but impossible to distinguish in a general fauna.

The town of Geraldton, on the Johnstone River, some 60 miles south of Cairns, has had its name officially altered to Innisfail, by which name I shall quote it in future. Unfortunately it has been sometimes confused with Geraldton in West Australia, at the other end of the continent.

The figures placed after localities refer to months of capture.

# REVISION OF THE NYCTOZOILIDES—GENERA AND SPECIES (Fam. TENEBRIONIDÆ).

By H. J. CARTER, B.A., F.E.S.

## REVISION OF THE AUSTRALIAN NYCTOZOILIDES (TENEBRIONIDÆ).

LACORDAIRE divided the *Helæides* into two groups—

- (i.) Prothorax and, generally, the elytra  
foliated laterally      ...      ...      ...      *Hélæides vrais*
- (ii.) Prothorax and elytra not foliated  
laterally      ...      ...      ...      ...      *Nyctozoïlides*.

The second of these contain aberrant forms, sometimes little related *inter se*, and are, according to the above, degraded *Helæides*. The prothorax is in general moderately widened and channelled within, with a more or less thickened raised border; the head is less enclosed by the anterior angles of the prothorax than in the true *Helæides*, while the posterior intercoxal process is much wider, diverging behind and rounded in front, and strongly bordered; the epimera are more or less posterior, so that the episterna generally reach the sides of the mesothorax. The prosternal process is wide, strongly produced and more or less rounded at the apex. The antennæ are generally longer than in the true *Helæides*, while the form of the body is usually more elongate and convex.

The genera and species are widely distributed over the whole continent of Australia, and probably form relics of its most ancient fauna, occurring, often as rare species, in the driest and least-explored districts; so that it is not remarkable that hitherto comparatively few examples are found in the older collections. Isolated forms of great interest, the prehistoric remains of a dying race, are still being brought to light, and it is probable that a large number of species will be discovered as the vast interior of Australia—now in process of desiccation, according to Professor Spencer—is more systematically visited by the naturalist.

The group has been long in a confused condition, so that it has been difficult to determine species already described, and even to determine the genera themselves, except by those entomologists who have access to the types. It is especially for the sake of Australian entomologists that the author ventures to tabulate the genera and species, though aware of his inability to do full justice to the subject, having at least one qualification in the opportunity of inspecting a larger quantity of material than that available to previous writers on the group. A visit to London three years ago thus enabled him to examine the types of *Onosterrhus*, *Hypocilibe*, *Amphianax*, &c., in the British Museum collection. The collections of the Macleay and Australian Museums in Sydney, of the National Museum, Melbourne, and the Queensland Museum, Brisbane, have all been examined, thanks to the courtesy of the respective curators; also I have to thank Mr. Lea for the loan of his collection; while fairly long series of certain species in my own collection, many of which were captured by the author, enable me to speak more decidedly on sexual and other variations. The present classification of the genera of the Australian Tenebrionidæ is so confused that we are grateful to Herr Gebien for some attempt at placing the genera of this group in a more natural order in the new catalogue of Junk. In this catalogue sixteen genera appear, of which two, *Cilibe* and *Pseudopatrum*, are confined to New Zealand, and one, *Pseudhadrus*, to the Seychelles Islands. These three are therefore excluded from the range of this paper. Gebien also places *Trichosaragus*, *Ospidus*, *Edyllus*, and *Byallius* in this section. As regards the first of these, the author, Blackburn, placed *Trichosaragus* as an ally of *Saragus*, and thus a member of the true Helæides. Through the courtesy of Mr. Tepper I have received cotypes of *T. pilosellus*, Blackb., and an examination of this insect leads me to endorse Gebien's classification of it under the Nyctozoilides. The mandibles are bifid at the apex (a fact omitted in the generic diagnosis of the author), while the prothorax and elytra are not foliaceous nor dilated laterally, while the intercoxal process is wide and rounded. Pascoe placed *Ospidus* also under Helæinæ, as an ally of *Cilibe*. Its winged body, with the corresponding elongate metasternum, and its narrow triangular intercoxal process, and comparatively wide though declivous lateral border to the elytra, are combinations of characters quite opposed



to this classification. I prefer, therefore, to consider *Ospidus* as an aberrant form of the true *Hekeides*. *Re Edylius*, its author, Champion, referred it to the *Pedinides* of Lacordaire, and my present ignorance of this group prevents any discussion as to the correctness of the proposed change. As regards *Byallius*, Pascoe placed it amongst the *Adeliinæ* as an ally of *Atryphodes* (*Cardiothorax*), but this seems to me a mistake, since the form of the prosternum, the wide intercoxal process, the sculpture of the elytra, and shape of the prothorax at once proclaim it as a nearer ally of *Æthalides*. Thus *Ospidus* and *Edylius* have been excluded from my list, while *Trichosaragus* and *Byallius* have been retained. The group thus contains, according to the present writer, eleven existing genera, to which he ventures to add a new genus, *Onotrichus*. The twelve genera of the Australian Nyctozoilides may be tabulated for identification as follows:—

TABLE OF THE GENERA OF THE NYCTOZOILIDES.

|  |                               |
|--|-------------------------------|
| 1. (2.) Eyes completely divided ... ..   | } Saragodinus.                |
| 2. Anterior tarsi dentate on outer edge ... ..   |                               |
| 3. (23.) Eyes not completely divided.  |                               |
| 4. (19.) All tibiæ with outer edge entire.   |                               |
| 5. (20.) Mandibles bifid at apex.  |                               |
| 6. (8.) Submentum with a strong lateral tooth projecting vertically.   |                               |
| 7. Form very convex, elytra smooth, sub-obsolete-ly costate, or (rarely) rugose-reticulate ... ..                      | } Onosterrhus.<br>Hypocilibe. |
| 8. Form more elongate and depressed, anterior angles of prothorax acutely produced ... ..                              |                               |
| 9. (14.) Submentum angulate, scarcely or very shortly dentate.   | Agasthenes.                   |
| 10. (12.) Form elongate-ovate, convex, sub-parallel.   |                               |
| 11. (14.) Prothorax evidently wider than long.   |                               |
| 12. Elytra finely costate, intervals rugose-punctate ..  | Æthalides.                    |
| 13. (14.) Form more ovate and explanate.   |                               |
| 14. Elytra strongly sculptured, costate, or rugose-reticulate, or both ... ..  | Nyctozoilus.                  |
| 15. (20.) Submentum not at all dentate.  |                               |
| 16. (18.) Form elongate, narrow and convex.  |                               |
| 17. Prothorax nearly as long as wide, its surface asperate ... ..  | *Styrus.                      |
| 18. Prothorax much wider than long, its surface smooth or finely punctate ... ..                                       | Byallius.                     |
| 19. Form sub-depressed, prothorax contracting in front ... ..  | *Amphianax.                   |
| 20. Pilose, convex, smaller than above, sides of prothorax, anterior and intermediate tibiæ crenulate on outer edge .. | Trichosaragus.                |
| 21. (23.) Mandibles simple at apex.  |                               |
| 22. Prothorax short, subtruncate at apex, eyes not at all divided ... ..   | Aglypta.                      |
| 23. Anterior tibiæ crenulate on outer edge ... ..  | Onotrichus n.g.               |

In the above, the second column of numerals (in brackets) refers to the number in the first column that is included by the character specified.

\* Bates omits any reference to mandibles in *Styrus* and *Amphianax*. I find them distinctly bifid at apex in *Styrus*, but unfortunately I have no specimen of *Amphianax* for examination.

## NOTES ON THE GENERA.

*Onosterrhus*, Pasc. = *Hypocilibe*, Bates.

I am able to endorse the sagacious forecast of Dr. Haag-Rutenberg (Journ. Mus. Godeffr. 1879, p. 119), who strongly suspected the connection between these genera, and who in describing *Hypocilibe impunctata* noted that one of the distinctive characters of Bates's genus—the structure of the maxillary palpi—had already broken down. Mr. Blackburn makes a similar suggestion (These Proc. 1890, p. 564), though he seems not to have identified any described species of *Onosterrhus*, and no collection in our museums or elsewhere in Australia contained identified specimens of Pascoe's genus. The opportunity of a visit to the British Museum collection in 1907 enabled me to examine Pascoe's and Bates's types, while the examination of a large number of specimens makes it certain that there is no valid ground for retaining the genus name *Hypocilibe* as distinct from *Onosterrhus*. Bates distinguished *Hypocilibe* from *Onosterrhus* by its more expanded and less convex form, the more deeply sulcate gula, and the cultriform apical joint of the maxillary palpi (which in *Onosterrhus* is triangulate); the submentum tooth is larger and the sides of the epistoma more parallel. All these distinctions fail in my examination of the large number of species now available. The species of *Hypocilibe* are mostly very large, of *Onosterrhus* much smaller, so that characters like the tooth of submentum and the gular sulcus are more evident in the former. The distinction in the apical joints of the maxillary palpi would be a good one if constant or definite, but I find it impossible to say exactly where such a joint ceases to be triangulate, and in this matter it depends very much on the position of this joint in relation to the preceding joints. Moreover, in no case can I find this joint to be truly cultriform, even in the typical species *H. Macleayi* (of which I feel sure of correct identification); it is rather securiform, or sub-triangulate in certain positions. In size, the described species of *Onosterrhus* vary from 12 mm. long (*O. laevis*, Pasc.) to 18 mm. long (*O. Batesi*, Haag-Rut.), while those of *Hypocilibe* vary from  $15\frac{1}{5}$  mm. long (*H. inconspicua*, Blackb.) to 23 mm. long (*H. heroina*, Blackb.). In form they vary from being widely ovate to elongate-ovate and sub-parallel, with varying degrees of convexity. I propose, therefore, to merge the species of these two genera, and in future to

consider *Hypocilibe* as non-existent in describing the following new species. The described species are thus eighteen in number. Of these I have twelve more or less certainly identified in my collection, two more have been identified (with a query) in other collections, while the following five species are so far unknown to me:—*O. lævis*, Pasc., *O. punctulatus*, Bates, *O. inconspicuus*, Blackb., *O. lugubris*, Blackb., *O. veternosus*, Blackb. (the last three described as *Hypocilibe*). The inclusion of the sub-parallel species with those of oval form, together with my wider study of the group, makes it necessary to refer *Agasthenes Stepheni*, Cart., to *Onosterrhus*, where it occupies a position somewhere between *O. Deanei* n. sp. and *O. latus*, Blackb. I would also place *Nyctozoilus Sloanei*, Blackb., in this genus. The author seems to have had considerable doubt as to its correct place. The only character in which it varies from the normal is its submentum, where the "distinct tooth" becomes an enlarged angulate process. This variation also occurs in *O. socius* n. sp., *infra*, and throughout the genus I find graduated modifications of it varying from this wide angulation to the large knobbed tooth in *O. bos* n. sp. and *O. major*, Blackb. I would also suggest the synonymy of *O. inconspicua*, Blackb. = *O. lugubris*, Blackb., since their descriptions do not warrant their separation; the only differences named by the author being that the former has the "basal joint of the front tarsi channelled beneath and scarcely wider than the second joint," and the "impunctate ventral segments." These characters seem quite inadequate for distinction, depending largely on the condition of the specimens. The two species occur within the same geographical area (within forty miles). It is possible that *O. heroina*, Blackb., may be found conspecific with *O. major*, Blackb. I have been able to identify one specimen of the former from Shark Bay, and two of the latter from Yalgoo, W.A., from description, and note that, besides the differences quoted by Mr. Blackburn (Report of the Horn Expedition 1896, p. 279), my specimens of *O. major* have the epistoma slightly sinuate in front, while the species I assume to be *O. heroina*, Blackb., has that feature distinctly trilobed, while the whole head of *O. major* is much more strongly punctured. A longer series may show these, as well as the differences noted by their

author, to be inconstant. The genus *Onosterrhus* will thus consist of the following:—

- 7 species already described as *Onosterrhus* ;
- 11 species already described as *Hypocilibe* ;
- 1. (*O. Sloanei*, Blackb.) transferred from *Nyctozeilus* ;
- 1 (*O. Stepheni*,\* Cart.) transferred from *Agasthenes* ;
- 8 n. sp., *infra*.—Total, 28.

These may be tabulated as follows:—

TABLE OF ONOSTERRHUS.

- |  |   |
|--|---|
| 1. (36.) Colour black or brownish, elytra not obviously costate or reticulate.   |   |
| 2. (18.) Form widely ovate.  |   |
| 3. (11.) Size large.   |   |
| 4. (8.) Front edge of prosternum with tubercle.  |   |
| 5. Ocular lobe raised into pronounced tooth (as in <i>Pterohelaeus cornutus</i> ); dimensions 23-24 × 14-14.5 mm. ... ..                             | <i>bos</i> n. sp.   |
| 6. Ocular lobe not dentate.  |   |
| 7. Epistoma trilobed, head very minutely punctate, lateral gutter of pronotum wider; dim. 22-23 × 13 mm. ... ..                                      | <i>heroïna</i> , Blackb.                                  |
| 8. Epistoma sinuate, head manifestly punctate, lateral gutter of pronotum narrower; dim. 22 × 12 mm. ... ..  | <i>major</i> , Blackb.                                    |
| 9. (44.) Front edge of prosternum without tubercle.  |   |
| 10. Obscure brown-black, quite impunctate above, shoulders not prominent; dim. 20 × 12 mm. ... ..  | <i>impunctata</i> , H. Rut.                               |
| 11. Nitid brown-black, head finely punctured, shoulders prominent through the widely reflexed epipleural fold; dim. 20 × 12 $\frac{5}{8}$ mm. ... .. | <i>rotundata</i> , Blackb.                                |
| 12. Size less.   |   |
| 13. Upper surface opaque black, angles of prothorax slightly acute; dim. 15 $\frac{1}{2}$ -16 × 8 mm. ... ..   | <i>lugubris</i> , Blackb.<br><i>inconspicua</i> , Blackb. |
| 14. Upper surface nitid black, angles of prothorax very acute; dim. 17 × 10 mm. ... ..   | <i>Duboulayi</i> n. sp.                                   |
| 15. (18.) Size small, 14 mm. long.   |   |
| 16. (18.) Anterior angles of prothorax acutely produced.   |   |
| 17. Elytra smooth and impunctate ... ..  | <i>acuticollis</i> n. sp.                                 |
| 18. Elytra sub-obsolete costate, strongly punctate   | <i>goudiei</i> n. sp.                                     |
| 19. (36.) Form elongate-ovate.   |   |
| 20. (22.) Size large.  |   |
| 21. Opaque black, sides of prothorax rounded, margins thick, elytra with parallel sides; dim. 21-22 × 10-11.5 mm. ... ..                             | <i>Stephensi</i> , Cart.                                  |
| 22. Pitchy-brown, moderately nitid, sides of prothorax less rounded, elytra with rounded sides; dim. 20 × 10 mm. ... ..                              | <i>læta</i> , Blackb.                                     |
| 23. (36.) Size smaller.  |   |

\* In Junk's Catalogue this name is misspelt as *Stephensi*.

† Species unknown to the author.

24. Head, pronotum, and elytra extremely finely punctured; dim.  $16 \times 8.5$  mm. ... *vage-punctatus*, H. Rut.
25. Head, pronotum, and elytra distinctly punctured; dim.  $13.5 \times 6.8$  mm. ... *\*punctulatus*, Bates.
26. Head finely, elytra distinctly punctured, pronotum smooth; dim.  $18 \times 9$  mm. ... *Batesi*, H. Rut.
27. (35.) Head finely punctured, pronotum and elytra smooth.
28. (30.) Elytra with parallel sides.
29. Margins of pronotum thick, sides rounded and sinuous behind; dim.  $16 \times 8$  (vix.) ... *Deanei* n. sp.
30. Margins of pronotum moderate, sides less rounded; dim.  $14 \times 6.6$  mm. ... *opacus*, Bates.
31. (36.) Elytra with rounded sides.
32. Four hind tibiae not hairy within; dim.  $15 \times 8\frac{1}{2}$  mm. ... *marginicollis*, Bates.
33. (35.) Four hind tibiae hairy within.
34. Prothorax in front simply emarginate, angles directed forward; dim.  $15 \times 8$  mm. ... *laevipennis*, H. Rut.
35. Prothorax strongly emarginate, angles directed outwards; dim. 12 mm, long ... *\*laevis*, Pasc.
36. Head smooth, pronotum finely, elytra strongly punctate; dim.  $10 \times 5$  mm. ... *parrus* n. sp.
37. (39.) Elytra obviously costate and reticulate.
38. Prothorax widest in front of middle, lateral channel smooth, posterior angles dentate; dim.  $20 \times 11$  mm. ... *socius* n. sp.
39. Prothorax widest at or behind middle, lateral channel rugose, posterior angles undentate; dim.  $18.5 \times 11$  mm. ... *Macleayi*, Bates.
40. Elytra with three evident costae on each, and sub-obsolete reticulated; dim.  $19-20 \times 11-12$  mm. ... *Sloanei*, Blackb.
41. Elytra feebly costate, not reticulate; dim.  $16 \times 10.4$  mm. ... *sculpturata*, Blackb.
42. Elytra feebly reticulate, not costate; dim.  $16 \times 9$  mm. ... *\*veteriosa*, Blackb.
43. Opaque brown, covered with squamose derm; dim.  $19-22 \times 10-13$  mm. ... *squamosus* n. sp.
44. Elytra with five testaceous vittae on each; dim.  $19 \times 10$  mm. ... *vittatus*, Blackb.

## NOTES ON THE ABOVE.

*O. impunctata*, H. Rut.—A single specimen in the Macleay Museum is labelled "Peak Downs," the district of the type.

*O. rotundata*, Blackb., I have from Forbes, Narromine, Cootamundra (New South Wales, Sea Lake (Victoria), and Condamine River (South Queensland).

*O. lata*, Blackb.—Doubtfully determined from description, I have from Mildura, Victoria.



*O. vage-punctatus*, H. Rut., was described as from Queensland. I have three specimens which answer to the description from Birchip, North-west Victoria.

*O. Batesi*, H. Rut.—Specimens in the Macleay Museum correspond very well to the description.

*O. opacus*, Bates.—Determined from a specimen in the National Museum, Melbourne, from West Australia.

*O. marginicollis*, Bates.—Two specimens from Kellerberrin, West Australia.

*O. laevipennis*, H. Rut.—A number of specimens which fit the description closely were sent by Mr. C. French from the North Territory, Port Darwin. The author only gives Australia as the locality, though Masters' Catalogue states Queensland as the habitat.

*O. Macleayi*, Bates, I have identified from Bell and Dalveen (South Queensland).

*O. Sloanei*, Blackb.—Several specimens given me by Mr. Sloane, from Moorilla, near Young, New South Wales.

*O. vittatus*, Blackb.—Two specimens given me by Mr. Illidge, one labelled "N. Queensland." There are also specimens in the Queensland Museum.

#### TABLE OF ÆTHALIDES.

[The genus *Agasthenes* has already been tabulated by me (Proc Linn. Soc. New South Wales 1910, p. 132.)]

- |    |   |                                     |
|----|---|-------------------------------------|
| 1. | (3.) Pronotum with explanate horizontal margin, thinly bordered.  |                                     |
| 2. | Elytra with sub-obsolete costæ, intervals closely, irregularly rugose-punctate and faintly reticulate                     | ... .. <i>punctipennis</i> , Bates. |
| 3. | Elytra with six well-marked costæ, intervals coarsely and irregularly punctured, the punctures defined and not very close | ... .. <i>costipennis</i> , Cart.   |
| 4. | (6.) Pronotum with lateral margin channelled, not horizontal, its border strongly thickened.                              |                                     |
| 5. | Elytra with eight indistinct costæ, intervals with irregular shallow foveæ  | ... .. <i>marginicollis</i> , Cart. |
| 6. | Elytra with ten distinct costæ  | ... .. <i>decemcostata</i> , Cart.  |

#### TABLE OF NYCTOZOILUS.

- |    |  |                                  |
|----|--|----------------------------------|
| 1. | (5.) Pronotum coarsely rugose, elytra intervals indefinitely reticulate. |                                  |
| 2. | Lateral border of pronotum crenulate; dim. 19-20 × 11 mm.                | ... .. <i>Deyrollei</i> , Bates. |

3. (5.) Lateral border of pronotum entire.
4. Colour coal-black, lateral border of pronotum strongly reflexed, hind angles produced; dim.  $16 \times 9$  mm. ... .. *carbonarius* n. sp.
5. Colour brown, lateral border of pronotum scarcely reflexed, hind angles not produced; dim.  $14 \times 7\frac{1}{4}$  mm. ... .. *ruficornis* n. sp.
6. (8.) Pronotum finely rugose, elytral intervals definitely reticulate.
7. Lateral border of pronotum thick, rounded and raised; dim.  $17-18 \times 9-10$  mm. ... .. *Mastersi*, Macl.
8. Lateral border of pronotum thin, scarcely raised; dim.  $18-20 \times 10\frac{1}{2}-11$  mm. ... .. *obesus*, Guér.
9. (23.) Pronotum punctate.
10. Elytra reticulate, not costate; dim.  $15\frac{1}{3} \times 8\frac{2}{5}$  mm. ... .. *irregularis*, Blackb.
11. Elytra 8-costate; dim.  $11-12 \times 6-6\frac{1}{2}$  mm. ... .. *Dœmeli*, H. Rut.
12. (23.) Elytra 6-costate.
13. (18.) Intervals definitely reticulate.
14. Size large,  $15-17 \times 9-10\frac{1}{2}$  mm. ... .. *reticulatus*, Bates.
15. (18.) Size smaller.
16. Lateral margins of pronotum reflexed, club of antennæ 6-jointed; dim.  $12 \times 7\frac{1}{5}-8$  mm. ... .. *crassicornis*, Blackb.
17. Lateral margins of pronotum horizontal, club of antennæ 4-jointed; dim.  $12\frac{2}{5} \times 8\frac{2}{5}$  mm. ... .. *approximatus*, Blackb.
18. Pronotum much more distinctly punctate than 17, club of antennæ 5-jointed; dim.  $12 \times 7\frac{2}{5}$  mm. ... .. *\*inequalis*, Blackb.
19. (23.) Intervals obsoletely or indefinitely reticulate.
20. Sides of pronotum slightly crenulate, deeply sinuate behind; dim.  $14 \times 7\frac{1}{2}$  mm. ... .. *\*sexcostatus*, Champ.
21. (23.) Sides of pronotum entire.
22. Sides of pronotum sinuate anteriorly and posteriorly; dim.  $13-15 \times 7\frac{1}{2}-9$  mm. ... .. *Hardcastlei* n. sp.
23. Sides of pronotum very slightly sinuate posteriorly only, margins scarcely differentiated from disc; dim.  $14 \times 8$  mm. ... .. *vermiculatus* n. sp.

## NOTES ON THE ABOVE.

*N. Deyrollei*, Bates.—The author gives the dimensions as “ $9\frac{1}{2}$  lin.; width of prothorax across the middle 4 lin.,” with the wide locality “Australia,” with the possible suggestion of “Western Australia?” I have specimens from Fernhills and other districts of Eastern Victoria, one of which was compared with Bates’s type, the dimensions being  $20 \times 11$  mm.

*N. Mastersi*, Macl.—Specimens from Kingaroy (H. Brown) and Daringa (C. French), South Queensland, have been compared with type. The author omitted to state the width, which is 9-10 mm.

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\* Species unknown to the author.

*N. obesus*, Guér.—In Trans. Ent. Soc. London, 1873, p. 348, Bates gives a comparison of *N. obesus*, Guér., with *N. Deyrollei*, stating the length of the type on the authority of M. E. Deyrolle as 9 lin.; but the author gives  $20 \times 11$  mm. Two specimens sent me by Mr. Illidge, from South Queensland, exactly fit the description, and correspond to the figure given in Lacordaire (except in the exaggerated fovea on the pronotum in that plate), and measure  $18 \times 10\frac{1}{2}$  mm.

*N. reticulatus*, Bates.—My specimens, compared with type, come from various parts of South-west New South Wales (Dubbo, Guntawang, &c.). I have taken a long series myself at Moorilla, near Young.

*N. irregularis*, Blackb.—A specimen, labelled as from Coolgardie, has been sent for determination from the National Museum, Melbourne (part of the French collection), and exactly corresponds to the author's diagnosis.

*N. Dameli*, Haag-Rut.—I have a specimen, labelled "Rockhampton," which exactly fits the description. It has not the slightest affinity with the species which Mr. Blackburn describes as *N. Sloanei*, though suggested by that author (Proceedings Linn. Soc. N.S.W., 1894, p. 104). Amongst other differences *N. Sloanei* is more than twice the size of *N. Dameli*.

*N. crassicornis*, Blackb., and *N. approximatus*, Blackb.—Specimens, bearing labels with their names, in Mr. Blackburn's handwriting, from the Horn Expedition, have been examined by me. Besides the differences noted by the author between these species, *N. approximatus* has the margins of prothorax more explanate and horizontal and corrugated, its border less thick and raised, the posterior angles much less acute and less (scarcely at all) produced than in *N. crassicornis*.

## STYRUS.

Dr. Haag-Rutenberg states that *S. (Nyctofoilus) elongatulus*, MacL., is not identical with *S. elongatulus*, Bates, but without giving any reason beyond the inference that the types of the insects referred to have been compared; at least, that is the meaning I attach to his words "wie die Typen auswiesen." I have cotypes

of Macleay's insect, and the very detailed description of Bates accurately corresponds to these. Bates himself says, "I have but little doubt that the species is the same as that described by Macleay." But I do not think that Macleay's type has ever left its original quarters in the Australian Museum, Sydney. Hence without further evidence I must conclude that Dr. Haag-Rutenberg was mistaken, and that there was no need for the name *S. Batesi* which he proposed for Bates's insect, and which appears in Junk's new catalogue; and that the following synonymy holds:—

$$\textit{Styrus} \left\{ \begin{array}{l} \textit{Batesi}, \text{ Haag.} \\ \textit{elongatulus}, \text{ Bates} \end{array} \right\} = \textit{S. elongatulus}, \text{ Macleay} \\ \hspace{15em} (\textit{NyctoZOILUS}).$$

Having collected a long series of *Styrus* in Southern Queensland and Northern New South Wales, I must express some doubt as to the absolute certainty of the above synonymy, since it would be possible to make two or three species from these specimens. The variations in size and sculpture are considerable, but while any lingering doubt remains as to the synonymy referred to I think it unwise to add to the mystery by the description of closely allied forms.

#### TABLE OF STYRUS.

##### A. Sides of prothorax nearly straight.

Propleuræ coarsely punctate; dim.  $17 \times 7$  mm. *elongatulus*, MacL.

Propleuræ less coarsely punctate; dim.  
 $12 \times 5$  mm. ... .. *clathratus*, Blackb.

##### B. Sides of prothorax much widened; dim. $16 \times 8.3$ mm. *laticornis*, Cart.

*S. clathratus*, Blackb.—I have a specimen, exactly corresponding to the description, given me some years ago by my friend Mr. T. G. Sloane, without any locality label. It is probable that this is a cotype, since Mr. Blackburn also obtained his specimen from Mr. Sloane. It is readily distinguished by its small size, more cylindric form, paler colour, and finer sculpture from *S. elongatulus*, MacL.

*S. laticornis*, Cart.—Specimens of this were taken by Mr. Sloane and myself at Guyra, New South Wales, in December, 1910. Amongst other differences the elytral costæ and reticulations are much more sharply raised than in *S. elongatulus*, MacL.

#### BYALLIUS.

A table of the species of this genus has already been published (Proc. Linn. Soc. N.S.W. 1909, p. 141).

The following are the species proposed as new:—

**ONOSTERRHUS PARVUS** n. sp.

Elongate-ovate, convex, black sub-opaque above, nitid black beneath, legs piceous, antennæ and tarsi red. *Head* glabrous and impunctate, labrum emarginate, epistoma rounded in front with scarcely perceptible break of curve at the canthus, edges slightly raised, limiting suture only indicated by depression, eyes small and widely separated, antennæ short thin, third joint shorter than the two succeeding, apical four nearly round, of a lighter colour, thirteenth conical. *Prothorax* rather flat,  $2.5 \times 4$  mm. (length measured in middle, width at base), very minutely punctate, slightly wider at base than at apex, the latter arcuate-emarginate, not margined, anterior angles feebly produced and bluntly rectangular, extreme border (viewed sideways) wide, (viewed from above) narrowly reflexed and channelled within, sides irregularly rounded with a feeble anterior and stronger posterior sinus, the thickened border feebly produced posteriorly downwards and outwards in a short tooth, posterior angle within this border sub-rectangular, without any indication of a central line or basal foveæ. *Scutellum* very transverse and narrow. *Elytra* elongate-ovate, very convex, slightly wider than prothorax at base, greatest width behind middle, sides with a scarcely perceptible margin, only evident from above near the shoulders, apical declivity steep, disc strongly and irregularly punctate with here and there some indications of lineate arrangement (*e.g.*, on each side of the suture a line of rather elongate punctures), with two more or less lævigata intervals, besides the suture, equally distant on each elytron, punctures on apex smaller but evident, lateral row of larger punctures traceable from base to apex. *Mentum* trapezoidal, submentum with lateral tooth widened into a lobate process, transversely strigose and punctate, sternum and femora finely punctate, abdomen and epipleuræ strongly striate and finely punctate, two apical segments of abdomen punctate only, all coxæ finely punctate, tibiæ more coarsely punctate than femora, otherwise smooth, ♂ with slight tomentose line near base of tibiæ.

*Dimensions*:  $10 \times 5$  mm.

*Habitat*: Kookynie, West Australia.



Five specimens are under examination, collected by Mr. Edgar Duboulay, of Kookynie, of which I can only determine one as a male. There is little variation in size. The species differs from the other elongate-ovate species in its small size and distinctly punctate elytra, the nearest allied species — *O. lavis*, Pasc. — having impunctate elytra.

**ONOSTERRHUS ACUTICOLLIS** n. sp.

Ovate, subnitid, glabrous, black (sometimes with a brownish tinge, antennæ piceous red, tarsi clothed with light-brown tomentum. *Head*—Labrum prominent, showing membranous hinge, epistoma truncate in front, not at all reflexed, sides oblique, meeting canthus at a wide angle, raised and rounded in front of eyes, limiting suture straight and not strongly impressed, minutely punctured; punctures more evident on epistoma than on forehead, antennæ not extending to base of prothorax, third joint as long as fourth and fifth combined, 3-7 sub-cylindric, eighth transverse and cup-shaped, ninth and tenth nearly round, eleventh largest and oval. *Prothorax*  $3 \times 6$  (vix) mm. (length measured in middle, width near base), wider at base than at apex, width across anterior angles 3.7 mm., apex strongly emarginate, anterior angles produced in front of eyes and sharply acute, sides gradually diverging to beyond the middle, then sub-angulately converging and sinuate before the slightly produced acute posterior angles, base and apex with a thin but regular raised border, sides with a strongly raised thickened marginal fold, forming an ample gutter within, disc very slightly convex and almost microscopically punctured. *Scutellum* very widely transverse and short. *Elytra* wider than prothorax and three times as long, humeri obsolete, sides widening in an oval to beyond the middle, rather abruptly contracted near apex, the apex itself lobate, border narrowly raised and shining, very slightly channelled within; disc very convex, depressed at suture behind scutellum, quite impunctate and smooth except for lateral row of punctures continuous almost to apex, apical declivity subvertical; epipleuræ smooth, abdomen finely striolate, posterior intercoxal process widely rounded; prosternum transversely striolate, its process produced into a blunt tooth, tooth of submentum conical and short, anterior tarsi with first joint longer and wider than the rest, tibiæ slender, posterior tibiæ without tomentose line.

*Dimensions*:  $14 \times 8$  mm.

*Habitat*: Sea Lake, Victoria.

I am indebted to Mr. J. C. Goudie for several specimens of this species, which I was able to compare with Pascoe's types of *Onosterrhus* in the British Museum, from all of which it differs in the pronounced anterior angles of the prothorax. In general form it is nearest to *O. lævipennis*, Haag-Rut. The type is certainly male; what I take to be a female has the anterior tarsi becoming gradually smaller from base to apex, and the anterior angle of prothorax even more strongly produced and a little outwardly directed. The species in this respect resembles *Agasthenes*, but is otherwise very different.

A single specimen, mutilated as to antennæ and hind tibiæ, differs so markedly from the above, though of the same size, colour, and facies, has been sent with the above, and can best be described by comparison with *O. acuticollis* as follows:—

#### ONOSTERRHUS GOUDIEI n. sp.

*Head* wider in front of eyes than the preceding, epistoma truncate in front with the sides rounded in a curve continuous with that of canthus, separated from the forehead by a sinuate suture, the whole microscopically punctured. *Prothorax*  $4 \times 5.5$  mm., more widely emarginate at apex, anterior angles even more acute than in the preceding species, and produced forwards and outwards; sides more evenly but less widely rounded, distinctly sinuate near both angles, more strongly in front than at base, posterior angles acute and a little outwardly directed, margins more strongly thickened, lateral gutter wider and more uniform, disc quite smooth in middle, with minute punctures only perceptible at sides. *Elytra* more nitid, sutural region strongly depressed and concave, apical declivity steeper, each elytron with four almost smooth costæ, the space between these with irregularly scattered indefinite rows of evident (to the naked eye) punctures, these becoming larger towards the sides, with the usual single row of large punctures at the extreme sides. Intercoxal process truncate with nearly parallel sides, prosternum smooth, its process wider than in *O. acuticollis*, lateral tooth of submentum short and triangular, mandibles wider.

*Dimensions*:  $14 \times 8$  mm.

*Habitat*: Sea Lake, Victoria.

The strong punctures on the elytra, the depressed suture through the greater part of its length, the bisinuate sides of prothorax, with the strongly produced anterior angles, differentiate this species from *O. acuticollis*. The punctures are more or less arranged in rows between the sub-obsolete costæ, but are not in definite lines, and are much larger than in any hitherto described species of the genus.

### ONOSTERRHUS SQUAMOSUS n. sp.

Widely elongate-ovate, convex upper surface opaque-brown, clothed with short, squamose, rust-coloured hair, underside nitid black, palpi reddish, tarsi and inside of tibiæ clothed with red tomentum. *Head*—Labrum very prominent, epistoma sub-truncate (a little incurved at middle), rounded at sides, making a wide angle with canthus, the latter widely rounded and very little raised, epistoma separated by a deep transverse impression, front rather flat, whole surface (where not obscured by derm) closely punctate, the punctures larger on epistoma and labrum. Antennæ not extending to base of prothorax, third joint as long as fourth and fifth combined, 4-7 increasingly wider, obconic, 8-10 shorter and narrower than seventh, eleventh sharply acuminate, little longer and narrower than the tenth. *Prothorax*  $6 \times 10.5$  mm., widely emarginate at apex, wider at base than at apex, widest at middle, anterior angles rounded and obtuse, sides widely rounded, a little sinuate near base, posterior angles shortly produced backwards and acute, base truncate, margins regular, wide and explanate with extreme edge very narrowly raised, whole prothorax without perceptibly differentiated border and (where not obscured by derm) strongly but not closely punctate; disc very convex, without foveæ or canaliculation. *Scutellum* widely triangular. *Elytra*  $14 \times 12$  mm., shoulders rounded but emphasized by epipleural fold, convex longitudinally and transversely, highest and widest behind middle, gradually widening from shoulders to near apex, with very narrow horizontal border (evident from above throughout, suture flat, a row of large lateral punctures, clothed, but not punctate, like head and prothorax (an abraded specimen

shows an irregular, uneven, rugose surface, with feeble, sub-obsolete costæ). *Abdomen* finely punctate and strigose, prosternum punctate with a short red hair produced from each puncture, its process sulcate in the middle, raised at sides, deflexed and bluntly rounded at apex. Coxæ and legs punctate, epipleuræ smooth, tooth of submentum small, fore tibiæ slightly curved, other tibiæ straight, posterior basal tarsi as long as the rest combined.

*Dimensions*: 19-22 × 10-13 mm.

*Habitat*: Coonamble and Walgett, New South Wales.

Six specimens are under examination—from the Agricultural Department (collected by Mr. Fröggatt), the Macleay Museum (through the courtesy of Mr. Masters), and the author's collection. Two are certainly male, larger than the presumed females, and have the basal joints of their fore tarsi enlarged, otherwise, except by my examination of the sexual organs, there are no pronounced sexual characters. It is differentiated from all other species by its combination of large size, squamose clothing, the scarcely evident tooth of submentum, and the absence of a defined border to the pronotum, the wide margins of which are punctured like the rest of the unclothed surface. More elongate than *O. impunctatus*, Haag-Rut., or *O. rotundatus*, Blackb., with the apical declivity steeper. There is considerable variation in size, convexity, and even in the anterior angles of prothorax, which (seen from behind) appear acute, but in general form an angle of about 100 deg. In the small tooth of submentum and other respects this species shows a divergence towards *Æthalides*.

### ONOSTERRHUS bos n. sp.

MAS.: Widely ovate, convex, whole surface coal-black, nitid, palpi and apical joints of antennæ piceous, apex of tibiæ and tarsi beneath clothed with reddish tomentum. *Head*—Epistoma evenly rounded in front, deeply and widely impressed at sides, forming a wide angle with canthus, the latter straight at the sides, produced and slightly raised in front, forming an evident tooth; forehead separated from epistoma by sinuate ridge, the whole upper surface of head closely and not very finely punctate (punctures stronger on epistoma), eyes small, transverse; antennæ not reaching base of prothorax, third joint as long as the



fourth and fifth together, cylindric, 4-8 successively shorter and wider, subconic, 9-11 much shorter than preceding, narrower than 7, rounded. *Prothorax*  $6.5 \times 11$  mm. (length measured in middle), widest behind the middle, wider at base than at apex (10.5 and 7 mm. respectively), apex widely emarginate, acute anterior angles produced obliquely outwards, sides behind front angles *slightly*, before hind angles *strongly* sinuate, between these sinuations widely rounded with a strongly thickened, rounded, raised, and nitid border, posterior angles very acute, dentate, directed outwards and a little downwards; basal border narrower but evident throughout, apical border wider than basal but much narrower than lateral, obliterated in the middle; disc finely, distinctly canaliculate, very minutely and closely punctured, moderately convex and somewhat explanate laterally, with a wide gutter within the border continuous throughout. *Scutellum* very transverse, raised and emphasized by deep triangular depression behind it. *Elytra*  $16 \times 14$  mm., widely oval, very convex, wider than prothorax at base, shoulder obsolete, widest at middle; steeply declivous and widely rounded at apex, very narrowly margined and channelled throughout, suture transversely deeply depressed behind scutellum, less deeply longitudinally for a short distance behind this, then with stitch-like impressions forming short transverse costæ till near apex; whole disc microscopically punctured and showing under a strong lens faintly vermiculate reticulations in places, with the faintest indications of sub-obsolete costæ, without a sign of the usual lateral row of punctures. *Epipleura* longitudinally impressed, abdomen with basal segments strongly striolate, apical segments closely and evidently punctate; prosternum minutely punctate, in front convex with border raised and sub-tuberculate at middle with some small transverse wrinkles behind this, the prosternal process wide, parallel, its sides raised and channelled within, its apex bluntly rounded and slightly raised. The coxæ, especially the four anterior, strongly punctured, tibiæ straight, shortly bispinose, and tomentose at apex and for a short distance on inner margin. Under surface of head opaque, coarsely and closely punctate, the gula with two large foveæ near middle, and finely transversely wrinkled near sides, teeth of submentum form large blunt prominent tumuli with apex simple.



Anterior tarsi with basal joint much wider than and as long as the next two combined, posterior tarsi with basal joints as long as the rest combined.

FEM.: Larger and more nitid than ♂, thorax wider, transverse sutural markings less evident, the faint elytral markings even more obscure, the posterior tibiæ tomentose at the apex only, basal joint of anterior tarsi less enlarged, posterior tarsi with claw joint longer.

*Dimensions* of ♂,  $23 \times 14$  mm.; ♀,  $24 \times 14.5$  mm.

*Habitat*: South Australia (Overland Route of Railway to Kalgoorlie); West Australia—Sandstone, Lawler's District.

Two specimens have been examined—the male taken by Mr. H. Deane, M.Inst.C.E., on his survey of the railway route, the female kindly sent by Mr. C. J. Clayton. The slight differences noted in the two specimens are, I think, only individual or sexual variations, while the shape of the head, somewhat as in *Pterohelaus cornutus*, MacL., alone clearly distinguishes it from what I take to be *O. heroina*, Blackb. (a specimen of which I have from Shark Bay), which is its nearest ally. The following are the chief points of difference in my specimen of *O. heroina*, Blackb.:—

*O. heroina*, Blackb.: Epistoma trilobed, not angulate, canthus rounded, submentum with tooth bifid, or at least not entire at apex, tubercle on front of prosternum much larger, lateral channel of pronotum narrower, its anterior angles less acutely produced, elytra with indefinite longitudinal scratch-like markings, the border and lateral channel slightly wider than in *O. bos*. Both species present in general a smooth nitid black surface.

(Since writing the above I have received two more specimens, which I consider conspecific with *O. bos*. The first, A, from Kalgoorlie, is much smaller,  $21 \times 11$  mm.; the other, B, from Shark Bay (whence my specimen of *O. heroina* came), is  $24 \times 14$  mm. A also differs in its lighter and more nitid colour (distinctly brown), and in its more rounded sides of prothorax, and may prove to be a distinct species. At present it may be noted as a variety.)

#### ONOSTERRHUS DUBOULAYI n. sp.

Oval, very convex, upper surface nitid black (with brownish tinge), beneath glossy black, oral organs, apical joints of antennæ,

and tarsi red. *Head*—Labrum prominent, epistoma squarely truncate in front, joining the canthus at a wide angle, a little concave and depressed below the level of the forehead but without any separating suture, forehead with deep transverse fovea, whole head minutely punctate; antennæ third joint as long as fourth and fifth together, joints 4-7 obconic, 8-10 transverse and subtriangular, eleventh longer than tenth, ovate-acuminate. *Prothorax*  $4 \times 8$  mm. (length in the middle), greatest width behind the middle, wider at base than apex, anterior angles acutely produced in front of eyes, the angle only narrowly margined at apex, sides widely rounded, strongly sinuate before the acute posterior angles, the latter dentate and slightly twisted outwards; lateral border strongly thickened, rounded and raised, rather widely channelled within throughout, basal border very narrow, disc apparently quite smooth. *Scutellum* widely transverse and raised. *Elytra*  $11 \times 10$  mm., of same width as prothorax at base, widely oval, very convex, greatest width behind middle, apical declivity steep, each elytron separately rounded at apex, shoulders obsolete, border very narrow, channel within scarcely perceptible, disc very smooth, without a trace of definite sculpture, sutural region depressed behind scutellum, and showing faint transverse impressions. Abdomen faintly striolate on basal segments, and faintly and minutely punctate on the apical; all coxæ punctate and margined by carina, prosternum impressed with a single transverse line, its process produced into a blunt tooth, without any pustule on its front margin, submentum coarsely punctate, its lateral teeth small and blunt, mentum cordate, maxillary palpi with apical joint triangular.

*Dimensions*:  $17 \times 10$  mm.

*Habitat*: Kookynie, West Australia.

A single specimen, male (?), sent by Mr. Edgar Duboulay, after whom I have much pleasure in naming it. There is a very faint line of hairs on the inside of the hind femora. This species could only be confused with *O. major*, Blackb., and *O. lata*, Bl., from both of which it differs by its strongly thickened border of prothorax, while it is much smaller than *major*, Bl. It is much larger than, with quite a differently shaped prothorax to, *O. lugubris*, Bl.

**ONOSTERRHUS DEANEI** n. sp.

Elongate-ovate, elytra sub-parallel, opaque brown-black above, underside nitid, tarsi and apical joints of antennæ red. *Head*—Epistoma rounded in front, slightly sinuate at sides, a little hollowed and reflexed in front of eyes, canthus briefly rounded and raised, limiting suture transverse and straight, forehead rather flat, whole head minutely but clearly punctate, punctures most evident on epistoma. *Antennæ*—Third joint shorter than the fourth and fifth combined, joints 4-7 obconic, 9-10 nearly round, eleventh ovoid and larger than tenth. *Prothorax* 4.5 × 6.5 mm. (length measured in middle), little wider at base than at apex, widest behind the middle, sinuate at base, anterior angles deflexed, acute, with extreme ends rounded, sides diverging and parabolically curved to beyond the middle, then sinuately contracting near the acute posterior angles; all angles pointing obliquely outwards; extreme margins strongly thickened and nitid at sides, moderate on front of anterior angles, very narrow at base, obsolete at apex; disc quite smooth and impunctate, convex near base, widely explanate laterally, hollowed near anterior angles, impressed at base near posterior angles. *Scutellum* transverse and raised, without any sutural depression on elytra behind scutellum. *Elytra* 11 × 7.8 mm.; of same width at base as prothorax, very convex, humeri obsolete, gradually widening at first, then sub-parallel for the greater part of length, apical declivity moderate, extreme margins very narrowly horizontal and evident from above throughout; disc apparently quite smooth (under a strong lens seen to be minutely streaked), with the faintest suggestion of smooth costæ, and the usual row of large lateral punctures. Abdomen with basal segments faintly striolate, intercoxal process truncate and wide, prosternum convex, transversely striate, its process channelled, and rounded at apex. Tibiæ with very short spurs, posterior without line of tomentum, apex of the same and underside of tarsi clothed with yellow tomentum, submentum with a short knobbed lateral tooth, gula strongly and closely punctate and deeply impressed, the impression forming a triangular plate at the junction with prothorax, its apex pointing forward.

*Dimensions*: 16 × 7.8 mm.

*Habitat*: West Australia, on line of surveyed railway between Kalgoorlie and South Australia.

A single male specimen collected by Mr. H. Deane, M.Inst. C.E. It is nearest in form to *O. Batesi*, H.-Rut., and *O. opacus*, Bates; but the former (from Queensland) has punctured elytra, and is evidently larger, while *opacus* is evidently smaller, and has a squarer (less rounded) prothorax amongst other differences.

Type in the author's collection.

### ONOSTERRHUS SOCIUS n. sp.

Ovate, opaque black above, moderately nitid beneath, antennæ and tarsi piceous, the former with apical joint reddish, tibiæ and tarsi with red tomentum. *Head*—Labrum prominent showing membrane, epistoma truncate in front, side angles rounded, forming distinct though wide angle with the widely rounded and raised canthus; separating suture curved, well marked at the sides, forehead somewhat depressed (*i.e.*, little raised above the plane of epistoma), whole surface closely and not very finely punctured; antennæ not extending to base of prothorax, third joint as long as fourth and fifth combined, apical four rounded and more transverse than preceding, eleventh longer than tenth. *Prothorax*  $5.5 \times 8$  mm. (length measured in middle), greatest width in front of middle, wider at base than at apex, the latter emarginate with anterior angles acute but slightly rounded at tips, posterior angles acute and strongly produced into a defined tooth, sides slightly sinuate posteriorly, very little rounded and widened from base to near apex, then more strongly converging anteriorly, extreme margins thickened and rope-like, this border abruptly terminating on front of anterior angle, base and discal portion of apex without definite border, lateral channels wide and sub-foliaceous, base truncate, disc without any medial line, minutely and closely punctured, the punctures finer than those on head. *Scutellum* widely transversely triangular. *Elytra* ( $13 \times 11$  mm.) very convex and oval, wider than prothorax at base, shoulders obtusely rounded, greatest width near middle, margins very narrow and sub-obsolete anteriorly, slightly wider and horizontal near apex, extreme border very narrow and nitid, a lateral row of large closely-set punctures evident for greater part of length, each elytron with three distinct but not very prominent costæ, besides the raised suture, with irregular transverse reticulation, the interstices dotted rather closely with large punctures, irregular in size and position, becoming less defined and



obsolete at apex. Abdomen faintly striate, intercoxal process wide and round, prosternum convex, its process wide, produced, rounded, and slightly reflexed at apex. Tooth of submentum produced only horizontally forward; hind tibiæ with thin line of tomentum.

*Dimensions*: 20 × 11 mm.

*Habitat*: Nunga, Queensland (A. Bishop).

A single specimen, sex doubtful, labelled as above, is amongst some Tenebrionidæ sent by Dr. Hamlyn-Harris for identification. A close ally of *O. Macleayi*, Bates, it can be distinguished by the following characters:—Prothorax less rounded, wider in front of middle (in *O. Macleayi* it is widest at or behind the middle), lateral channel smooth (in *O. Macleayi* distinctly rugose), posterior angles strongly produced into an acute tooth (in *Macleayi* very slightly produced and not dentate); the elytral border is much narrower, while the surface sculpture is much more pronounced as to costæ, reticulation, and punctures.

Type in the Queensland Museum.

### NYCTOZOILUS CARBONARIUS n. sp.

Oblong-oval, opaque coal-black, very broad, convex and glabrous, antennæ with apex piceous. *Head*—Surface uneven, closely rugose-punctate, labrum prominent, showing membranous hinge, epistoma truncate with sides rather square, forming an angle with canthus, the latter raised and subangulate, depressed in front of eyes and not produced to cover any portion of eyes, epistoma separated from forehead by strong curved depression produced to the sides, with an elongate pustule in the middle, forehead widely channelled in the middle; antennæ long and stout, extending beyond prothorax, joint 3 two and a-half times as long as 4, 6 and 7 successively wider than 5, 8-10 wide and round, 11 one and a-half times as long as 10, cupola-shaped. *Prothorax* 4 × 6.5 mm. (length measured in the middle), greatest width behind middle, base wider than apex, both truncate-emarginate, anterior angles acute, produced forward and a little upturned, posterior angles strongly produced and slightly twisted outwards and downwards, sides a little undulate and widening to beyond halfway, then strongly sinuately narrowed before the sub-dentate hind angles, extreme border thickened and reflexed, margins fairly wide and



channelled within border, extreme border very narrow at sides, and not continued beyond the angles at apex; disc and margins (like the head) closely, not finely, punctate, with some coarse vermiculate impressions on the centre and short medial line near apex. *Scutellum* triangular, longitudinally deeper and less transverse than usual. *Elytra* much wider than prothorax at base, and closely applied thereto, shoulders obsolete, sides widely oval, with greatest width behind middle, apical declivity steep, each elytron with three sharp slightly undulate costæ, besides the double sutural elevation, the last more strongly raised and bifurcate in the scutellary region, becoming interrupted and nodulose on hinder half; the first costa extending from base to apical declivity, the second from base to beyond the first, the third starting from behind the shoulder at a junction with the second, reticulately and vaguely connected with second near apex; a lateral indefinite line of pustules on posterior half forming a fourth sub-costate impression; intervals with vermiculate transverse indefinite reticulation, with rows of large punctures on sides of costæ, and a row of larger punctures at sides, extreme border not raised or at all horizontal. Under surface black, moderately nitid, glabrous, and minutely shagreened, sternum closely punctate, prosternal process with raised margins, bluntly rounded at apex, intercoxal process wide, margined, the margin interrupted in middle; legs, especially hind femora, very long, tibiæ without tomentose clothing.

*Dimensions*: 16 × 9 mm.

*Habitat*: Yetholm, New South Wales (Mr. H. Deane, M.Inst. C.E.).

A single specimen, taken by Mr. Deane, is very distinct from all described species, differing from the other costate species in its subangulate-sided head, its wide elytra (compared with prothorax), the thickened and reflexed margins of prothorax with its pronounced hind angles, and the coarse elytral sculpturation, in which the reticulation is only well defined towards the apex.

Type in author's collection.

#### **NYCTOZOILUS HARDCASTLEI** n. sp.

Oblong-oval, convex, dull-black, without any apparent clothing of hair. *Head* closely and not very finely punctured, labrum

prominent, epistoma rounded in front, forming a distinct obtuse angle with the canthus, the latter raised and ear-like, extending halfway across the eyes, forehead depressed, divided from epistoma by deep straight depression not continued to the sides, antennæ long, longer in ♂ than in ♀, extending beyond the prothorax when at rest in both sexes, joint 3 about two and a-half times the length of 4, 6 longer than 5, 8-10 strongly transverse and nearly spherical, 11 oval, one and a-half times as long as 10 and wider than it. *Prothorax*  $3.5 \times 5$  mm., wider at base than at apex, widest at middle, apex truncate-emarginate, anterior angles advanced and acute with vertices rounded, sides sinuate anteriorly and posteriorly, strongly rounded in the middle, posterior angles obliquely produced and acute, explanate margins wide and horizontal, undifferentiated from disc in sculpture, extreme border narrowly raised throughout and simple; disc convex with two large symmetrical depressions, and, together with the margins, closely and evenly punctured (very much as in *Saragus lævicollis*, Oliv.) without medial line. *Scutellum* transverse and triangular. *Elytra* much wider than and two and a-half times as long as the prothorax, widest behind the middle, shoulders round and wide, sides well rounded, each with three well-raised, shining, slightly crenulate costæ, the first extending from base to the apical declivity, the second from the base extending nearer the apex (sometimes almost continuous with the third costa near apex) with a strong outward curve on anterior part, the third starting near the outward bend of the second costa (sometimes vaguely extending to the shoulder), and nearly reaching the apex; the suture itself forming a double costa less raised than preceding, the intervals between the costæ transversely rugose and corrugated (not reticulate), the surface everywhere roughly shagreened, a lateral line of impressions rather than punctures more evident anteriorly than posteriorly at extreme margin; beneath blackish-brown, quite smooth, three basal segments of abdomen minutely longitudinally strigose-punctate, apical segments and femora strongly but finely punctate only, pro-, meso-, and meta-sterna and coxæ thickly and not very finely punctured, prosternal process rounded at apex, with raised margins; submentum with a broad subdentate process extending horizontally forward at

the sides. Tibiæ and tarsi rather thinly clad with red bristles; hind tarsi with basal joints nearly as long as the rest combined.

*Dimensions*: 13-15 × 7.5-9 mm.

*Habitat*: Cunnamulla, South Queensland (Mr. H. Hardcastle).

Twelve specimens have been kindly sent by Mr. A. M. Lea, taken by Mr. Hardcastle, after whom I name this species. Of these four are male, the sexual distinctions being smaller (especially narrower) form, longer antennæ, the two basal joints of front tarsi evidently more transverse, and the hind tibiæ more densely clothed. The species is a close ally of *N. sercostatus*, Champ. (from North Australia), but having sent a specimen to Mr. Champion for comparison with his type, I am indebted to the courtesy of that eminent entomologist for the following note on *N. sercostatus* (as compared with the above species):—"The thorax is larger, less transverse, less tumid on disc, with anterior angles more extended forward and more acute, and hind angles extending further backward. The elytra are less rounded at the sides, more abruptly declivous behind, more strongly costate, the intermediate one shorter and not meeting either of the others behind; the puncturing of the under surface is more asperate, the prosternal process is broader, the mesosternal ditto, more tumid on each side anteriorly; the joints 9 and 10 of antennæ (which are wanting in your specimen) are strongly transverse." [*N. Hardcastlei* joints 8-11 are all strongly transverse.—H.J.C.] The anterior sinuation of the sides of prothorax is an unusual character and is strongly marked in every specimen.

Types in the author's collection.

### NYCTOZOILUS VERMICULATUS n sp.

Oblong-oval, dull brownish-black, convex, narrower than *N. Hardcastlei*, glabrous, antennæ with two basal joints and apex (also tarsi) red. *Head* coarsely and closely punctate, labrum very prominent, epistoma truncate with rounded sides (in ♀ making distinct angle with the canthus, in ♂ collinear with it), separated from forehead by an impression on each side, without definite suture, forehead impressed at middle, canthus little raised; antennæ not extending to base of prothorax, joint 3 about twice as long as 4, very slightly enlarging from base to apex, joints 8-10 round, not

wider than 7, 11 one and a-half times as long as 10, oval. *Prothorax*  $4 \times 6$  mm. (length measured in middle), greatest width at middle, base scarcely wider than apex, the latter arcuate-emarginate, front angles sub-rectangular, not prominent, sides moderately and evenly rounded, a little sinuate before the acute posterior angles, the latter produced and slightly overlapping elytra, extreme border nowhere clearly defined except on front angles; disc coarsely punctate, medial line clearly shown by small carina on basal and smooth impression on anterior half, a large foveate impression near centre, on each side of medial line. *Scutellum* very transverse and narrow. *Elytra*  $9.5 \times 8$  (vix) mm.; regularly oval, convex, at extreme base narrower than prothorax, soon widening and moderately rounded at sides, apical declivity moderate, each elytron with three slightly raised, wide, and crenulate costæ, and a fourth less distinct lateral costa, the suture also raised and nodulose-costate throughout, bifurcating near scutellum; the first and fourth costæ meet in a wide curve near apex, the second and third indefinitely terminating within this curve, the first three costæ extending to the base, the fourth sub-obsolete on basal half, and less clearly defined than the others (but evident) posteriorly, intervals vermiculate-rugose, not reticulate, the ridges more obviously transverse towards the sides, in the centre entirely confused, the costæ and ridges coarsely punctate; beneath moderately nitid, black with reddish tinge, abdomen minutely shagreened, epipleuræ smooth, sternum very faintly rugose, prosternum compressed into a narrow ridge, its process produced and rounded at apex, with carinate edges, intercoxal process wide, margined and tumid at the sides; femora apparently smooth, hind and intermediate tibiæ of ♂ rather strongly tomentose on the inside, of ♀ much less so, submentum with wide bidentate lateral process projecting forward.

*Dimensions*:  $14 \times 8$  (vix) mm.

*Habitat*: Augathella, South Queensland; sent by Mr. C. French, F.L.S.

Two specimens under examination, probably the two sexes. The female (?) has the front basal tarsi less enlarged, the abdomen more tumid, showing coriaceous margins, and less tomentose hind



tibiæ. The species differs from the two preceding in its evidently narrower elytra (compared with width of prothorax). From *N. Hardcastlei* it differs also in its much wider and less elevated costæ, the much coarser vermiculation of the intervals, and more coarsely punctured thorax; from *N. carbonarius* it further differs in its lighter colour, with its tendency to red, its complete absence of elytral reticulation, the evenly rounded sides of prothorax with very slight sinuation, &c. It is evidently much larger and with coarser sculpture than *N. Dæmeli*, Haag-Rut., a species identified by me in an insect from Rockhampton.

### NYCTOZOILUS RUFICORNIS n. sp.

Oblong-ovate, convex, dull-brown above, reddish-brown beneath, glabrous, antennæ and tarsi chestnut-red. *Head*—Labrum emarginate and ciliate, epistoma truncate with rounded angles, its sides making an obtuse angle with the prominent and ear-like canthus, forehead tumid at base, depressed anteriorly with two transverse ridges, one nearly straight limiting the epistoma behind, the other crescent-shaped, extending between the eyes and defining the frontal impression, the whole irregularly and finely rugose, antennæ scarcely reaching base of prothorax, joint 3 about equal in length to 4 and 5 combined, 8-10 rounded, wider than 7, eleventh ovate-acuminate. *Prothorax* 4 × 6.5 mm. (length measured in middle), widest at middle, arcuate-emarginate at apex, subtruncate at base, anterior angles sub-acute (nearly rectangular), prominent and directed outwards and a little upwards, sides widely rounded, distinctly sinuate in front, only slightly so behind, posterior angles sub-rectangular, not produced or prominent, foliaceous margins wide, corrugated and slightly undulate (a little above the horizontal in front, below the horizontal behind the middle), the base, sides, and angular portion of apex having a thin, entire, nitid border. Disc coarsely and irregularly rugose, with ill-defined medial channel, with some close shallow punctures showing near the sides. *Scutellum* widely transverse, with triangular depression behind it. *Elytra* oval, wider than prothorax at base and about twice as long, shoulders obtusely rounded, showing narrow epipleural fold, sides a little widened to the middle, apical declivity moderate, each elytron separately rounded at apex,



margins obsolete; disc costate, each elytron with three slightly wavy round costæ, extending from base nearly to apex, the first two meeting near that region, the third continuous but sub-nodulose to apex, a fourth costa less defined (more broken on apical half and less raised throughout) near and parallel to extreme border, and a short scutellary costa, bifurcated behind the scutellum, joining the first costa at basal margin, the intervals coarsely vermiculately rugose, with no semblance of reticulation, a single line of coarse punctures at the sides, and some foveate punctures showing amongst the confused ridges of the intervals, these punctures most evident near the sides and suture, the last *not at all raised* except in the scutellary region. Abdomen finely and closely corrugated, the two apical segments closely punctate, prosternum and pleuræ nearly smooth, the prosternal process rounded at apex, sulcate at sides.

*Dimensions*:  $14 \times 7.5$  mm.

*Habitat*: Camooweal, North Queensland.

A single specimen, probably ♀, kindly presented by Mr. C. French, is clearly distinguished from its allies. If classified by its elytral sculpture it is nearest *N. vermiculatus*, *supra* (which species is without the scutellary costa), but if by the sculpture of the pronotum it is nearest to *N. carbonarius*, from which it widely differs in size, colour, and shape (less prominent hind angles to prothorax, the margins thereof scarcely reflexed, the narrower and less widened elytra, *inter multa alia*).

#### AGLYPTA GEBIENI n. sp.

Elongate-ovate, black, moderately nitid, palpi, antennæ, and tarsi reddish. *Head* distinctly and closely punctate, punctures strongest on epistoma, labrum emarginate, epistoma truncate in front, flat above, forming with sides of canthus three lobes separately rounded; antennæ not quite reaching base of prothorax (longer and stouter than in *A. 8-costata*, Geb.), third joint as long as fourth and fifth combined, 4-7 slightly obconic, 8-10 oval, eleventh much longer than tenth, ovate. *Prothorax* widely arcuate-emarginate,  $3 \times 5.5$  mm. (length measured in middle), wider at base than apex, widest near base, anterior angles scarcely produced, bluntly sub-acute (about 80 deg.), sides more roundly converging in

front than in *A. 8-costata*, slightly sinuate at base, posterior angles not produced, obtuse but distinct, margins strongly thickened and raised at sides and channelled within, very fine at base, obsolete at apex, base truncate, surface and margins under a lens perceptibly punctate, otherwise smooth. *Scutellum* transversely triangular. *Elytra* ovate, convex, wider than prothorax at base, a little longer than wide ( $8 \times 7$  mm.), shoulders round, sides slightly widening to beyond halfway, apical declivity very steep, very narrowly bordered (only evident from above at shoulders and apex). Each elytron with 4 costæ, the first sub-obsolete and smooth not extending to base, the second and third more strongly raised, the fourth near sides rather undefined and interrupted, only distinct on apical half, the suture smooth and costate towards apex. Intervals not at all rugose, irregularly but not closely covered with large deep punctures, with the usual lateral row of punctures. Underside nitid black, epipleuræ smooth, abdomen very closely and finely punctate, basal segments wrinkled, prosternum transversely rugose, its process finely margined, its apex produced into a fine tooth; underside of femora punctate, the posterior and intermediate tibiae clothed on the inside with a thin line of red tomentum.

*Dimensions*:  $13 \times 7$  mm.

*Habitat*: Kookynie, West Australia.

Two specimens sent by Mr. Duboulay present no sexual characters beyond the evident organ of the male, but are evidently closely allied to *A. 8-costata*, Gebien. Of the latter species I have specimens from Nungarra and Day Dawn (the latter being the author's locality), which are clearly identified. My species differs from that of Herr Gebien in its larger size, clearly punctate head, the much thicker border of pronotum, the different sculpture of the elytra (the costæ less raised, intervals not at all rugose, the punctures more distant and distinct, and its prosternal process, *inter alia*).

#### ONOTRICHUS n. gen.

Mentum transversely cordiform, submentum with a wide horizontal lateral lobe, mandibles simple; last joint of the maxillary palpi triangular; gula rugose; head large with elevated convex ridge between the eyes, allowing only a partial inclusion by the prothorax; eyes small, sub-vertical, widely separated; canthus

projecting in front of eyes and slightly overlapping them; antennæ stout, not extending to base of prothorax, third joint as long as 4 and 5 combined, 4-6 obconic, 7 very transverse and sub-triangular, 8-10 round and narrower than 7, eleventh oval and twice as long as 10. Prothorax very wide, widely channelled within the strongly thickened border, all angles sub-acute (rounded at extreme tips), apex arcuate-emarginate, base nearly straight with hind angles produced, sides and base of pronotum and the whole elytral surface moderately covered with long, fine, upright yellow hairs, abdomen and legs more sparsely clad with shorter hair of darker colour, body very convex and solid; scutellum very transverse, prosternum very slightly convex, its process flat with raised margins, rounded at apex and received into a widely rounded mesosternal cavity; intercoxal process very wide, rounded at apex, diverging behind; legs short; fore tibiæ with emarginate crenulate edge on outside, posterior surface coarsely punctate, tibiæ very shortly bispinose at apex, the spines almost concealed by tomentose cushion.

### **ONOTRICHUS LATERALIS** n. sp.

Widely oval, black, moderately nitid above, very nitid beneath, apical joints of antennæ and tarsi red, tarsi and apex of tibiæ clothed with reddish tomentum, with a thin line of the same on the inside of posterior femora. *Head*—Labrum prominent, epistoma truncate in front, sides oblique and a little sinuate, very concave and depressed anteriorly, limited behind by bisinuate ridge, canthus parabolically raised and widened in front of eyes, front convex, the whole upper surface of head with large rather distant punctures. *Prothorax* 4 × 9 mm. (length measured in middle), greatest width behind middle, much wider at base than at apex (8 and 4.5 mm. respectively), emarginate at the produced bluntly acute anterior angles, sides very widely rounded with a small sinuation at each end, subdentate bluntly acute posterior angles deflexed; lateral border thick and rope-like, irregular in outline, and coarsely punctured and impressed, becoming more attenuate at the angles and much thinner at the apical margins of front angles (where it terminates); basal margin obsolete, lateral gutter of same width as border, strongly transversely rugose; disc moderately convex without any central line, and having a double

system of puncturation, the first consisting of large sparse punctures as on head, those towards the sides each bearing a long yellowish hair; the second consisting of minute and dense punctures. *Elytra* widely oval and convex,  $10 \times 9.5$  mm., wider than prothorax at base, shoulders widely rounded and sub-obsolete, sides gradually expanding to beyond the middle, apex very blunt, its declivity steep; extreme border very narrow, not seen from above, without lateral gutter. Disc with four raised crenulate costæ on each elytron, not quite extending to base, terminated at different points on apical declivity, the three interior costæ prominent and nitid, their crenulation caused by rows of large punctures on each side, the fourth less evident and continuous, partly broken up into rows of tubercles; space between costæ slightly concave and rugose, irregularly covered with large punctures (larger than those on pronotum), each bearing a long hair; these hairs thin and scattered on centre, thicker on sides, base, and apex. Abdomen densely minutely punctate, three basal segments with large additional punctures, bearing short setæ, prosternum finely rugose-punctate, femora and tibiæ with double system of punctures noted on upper surface; posterior tarsi with basal joint as long as the rest combined.

*Dimensions*:  $15 \times 9.5$  mm.

*Habitat*: Shark Bay, West Australia.

A single specimen, probably male, has been kindly presented me by Mr. C. French. I have been unwilling to dissect it for closer inspection of the mouth parts, but it can be readily differentiated from all described Nyctozoilides by the above diagnosis, and its longitudinally as well as transversely convex form.

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## A FISHERMAN'S SPIDER.

By C. W. De VIS, M.A.

A ZEALOUS correspondent, Mr. E. J. Banfield, of Dunk Island, has lately published in a local journal an interesting account of the art of fishing as practised by the natives in his vicinity. Among the many items of information recorded by Mr Banfield there is one which might be regarded as supplying evidence of aforetime intercourse between the natives of our North-east coast and those of New Guinea. That the fishermen of Papua use the web of a spider as a bait and tangle, by means of a kite, in their capture of fish, has already been made known to us,\* and we are now informed that aborigines on the fringe of our mainland employ for a like purpose the same substance, though not in the same manner. One's interest in this occurrence of an unusual custom prompted a request that the observer would help to make known also the spinner of the web to which he referred. To this request he kindly responded by sending an example of the spider for inspection. As was expected it proved to be a *Nephila*. It is, moreover, one that may at least take rank as an additional subspecies of *N. maculata*.

### NEPHILA MACULATA PISCATORUM nov. subsp.

The lineation of the sides of the abdomen, recorded by Mr. E. Simon in his description of the subspecies *N. maculata jalorensis*,† is here brought into great prominence by incrassation, which renders the sides obliquely corrugated and raises their margins above and below, considerably above the level of the adjacent surfaces; these consequently appearing to be depressed within; the corrugation extending fore and aft on the upper surface completely encloses it, on the lower it surrounds the sides and posterior end only.

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\* Annals Queensland Museum No. 5, p. 4, 1900.

† Proc. Zool. Soc., 1901, p. 58.



*Colouration*.—Abdomen above and beneath velvety dark green, on the posterior half of its upper surface four darker but faint lines converging towards the tip, immediately in front of which are two transverse yellow bands; on the lower surface a yellow transverse band interrupted in the middle, in front of the epigyne, and a large yellow spot behind it, sides of abdomen olive green relieved by yellow lines on several of the corrugations. Legs black, a bright yellow spot on each coxa and one beneath the distal end of each femur and tibia.

Female.—Ceph., 12 mm. long, 10 mm. broad.

Abd., 23.5 „ „ 12 „ „

Str. 6 „ „ 5 „ „

Che., 6 „ „ 4 „ „

|         | Coxa. |   | Tr. & Fem. |   | Pat. & Tib. |   | Met. & Tars. |          |
|---------|-------|---|------------|---|-------------|---|--------------|----------|
| Legs—1— | 4 mm. | — | 26 mm.     | — | 24 mm.      | — | 27 mm.       | = 91 mm. |
| 2—      | 3.2 „ | — | 21 „       | — | 19.7 „      | — | 30 „         | = 74.2 „ |
| 3 —     | 3 „   | — | 14.5 „     | — | 11 „        | — | 17 „         | = 45.5 „ |
| 4—      | 4 „   | — | 25.2 „     | — | 19 „        | — | 30.5 „       | = 78.8 „ |

Type in Queensland Museum.

Loc.: Dunk Island.

# DESCRIPTIONS OF SOME NEW QUEENSLAND ARANEIDÆ.

By J. LAMB.

## FAMILY OONOPIDÆ.

Group OONOPIDÆ MOLLES.

### MACEDONIA OCTOSPINATA nov. sp.

Cephalothorax dark castaneous-brown, ovate, longer than broad, longer than patella cum tibia of any pair of legs; cephalic part prominently convex, roundly truncated, hairs long sparse; clypeus inclined forwards, its depth equal to twice the diameter of a centre eye; normal groove separating cephalic from thoracic segment

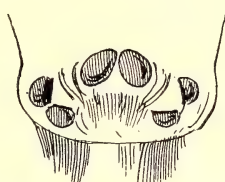


Fig. 1.—MACEDONIA OCTOSPINATA nov. sp.

Width of cephalium about eleven  
times its natural size.

visible. Eyes of about equal size, suboval, opalescent, in three subcontiguous groups; centre pair placed behind the front line of hinder laterals, and nearer to them than to the anterior laterals. Legs castaneous-brown, strong, relative length 1, 2, 4, 3; but little difference between the first, second, and third pairs; femur of fourth pair a little stouter than the others, femur of first pair with 5 short black spines on proximal end, of the second 4, of the third 3, and of the fourth

1; tibia of first, and second pair of legs with 8 spines beneath, 2 side spines on first, and second pairs, tibia of third with 3 spines; metatarsi first, and second, have two rows of 8 spines; metatarsus third pair with 2 spines, no spines on tibia, metatarsus, or tarsi of the fourth pairs. Superior tarsal claws; first pair strong, well curved, outer with 6 comb-teeth, and inner claw, with 7; inferior claw with one long curved tooth; sparsely clothed with long thin hair. Palpi castaneous-brown; humeral joint about as long as cubital and radial joints together, armed with a few short spines, and clothed with long hair. Falces dark castaneous-brown, conical, as long as the metatarsus of the third pair of legs; clothed with long hair. Labium suboval, truncated, rounded at the sides, two thirds the length of maxillæ; light castaneous-brown at base, apex light. Sternum same in colour as legs, elongate-oval, with a few long hairs around the margin. Abdomen elongate oviform, sparsely clothed with pale yellow hair.

Female.—Ceph., 5.5 mm. long. 3.5 mm. broad.

Abd., 6   ,,   ,,   3.5   ,,   ,,

|         | Coxa.    |   | Tr. & Fem. |   | Pat. & Tib. |   | Met. & Tars. |             |
|---------|----------|---|------------|---|-------------|---|--------------|-------------|
| Legs—1— | 1.9 mm.  | — | 4.4 mm.    | — | 4.5 mm.     | — | 3.5 mm.      | = 14.3 mm.  |
| 2—      | 1.7   ,, | — | 4.4   ,,   | — | 4.2   ,,    | — | 3.5   ,,     | = 13.8   ,, |
| 3—      | 1.2   ,, | — | 3.5   ,,   | — | 3   ,,      | — | 2.5   ,,     | = 10.2   ,, |
| 4—      | 1.5   ,, | — | 4   ,,     | — | 4   ,,      | — | 3   ,,       | = 12.5   ,, |

Or, 1, 2, 4, 3.

Type in Queensland Museum.

Loc.: Stafford-on-Kedron.

## GROUP GASTERACANTHÆ.

**GASTERACANTHA QUADRISPINA, nov. sp.**

Female; length of abdomen 6 mm., breadth at widest part, excluding spines, 12 mm., spines on posterior lateral margin, 2.5 mm., on anterior margin, 1.7 mm. Cephalothorax same as in *G. tæniata*, but much smaller; abdomen transversely suboval, with four angles, from which the spines spring, the two on the lateral margins, acute, directed obliquely forwards; the two on the posterior lateral margins a little longer, acute, directed obliquely forwards and outwards; posterior marginal pair absent. Cephalothorax and chelæ black; falces blackish-brown at base, lighter at tip; labium, sternum and legs dark castaneous-brown; abdomen pale yellow,



Fig. 2.—*GASTERACANTHA QUADRISPINA* nov. sp.

Twice the natural size.

with four central and nineteen marginal impressed spots, and two dark reddish-yellow spots on the posterior outer margin, the two anterior, three posterior marginal and four central spots black, a large black crown-shaped patch involving the two posterior central and three posterior marginal spots, the others reddish-yellow with darker centres. Spines blackish-brown; a well-developed, black, conical projection between spinnerets and epigyne.

Type in Queensland Museum.

Loc.: Eumundi.

## GROUP DOLOPHONEÆ.

## DOLOPHONES BITUBERCULATA nov. sp.

Cephalothorax reddish-brown, apex black, nearly as broad as long, as long as the femur of the first pair, broadest at the rear, narrowing gradually to the front. Cephalic part on a level with thoracic; fovea and side striæ strongly visible; covered with short dark castaneous-brown hair, rear and side margins grayish-white. Eyes unequal, four median eyes are situated on a prominence, the two front ones, about one and a-half their diameters apart; the side eyes, half their diameters apart, contiguous on a small tubercle; the front line of eyes slightly procurved; viewing from the front. Legs long, moderate in strength; reddish-brown, lower half of femurs and patellas much darker, covered with dark castaneous-brown hair; spines light brown; two longitudinal furrows on the upper side of tibiae and patellas. Palpi reddish-brown, moderately

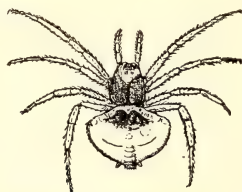


Fig 3.—DOLOPHONES BITUBERCULATA nov. sp.  
Natural size.

long, armed with long spines, and clothed with short castaneous-brown hair. Falces reddish-brown at base, upper part white, as broad as long, apex rounded. Sternum reddish-brown, shield-shape, somewhat straight in front, and rounded at the sides; furnished with a few long grayish-white hairs. Abdomen somewhat triangular in form, overhanging base of cephalothorax; the upper part with several ocellated spots, tuberculated and furrowed above, there are two tubercles on the front margin, 4 mm. apart, and one hump about 2 mm. high, divided in the centre, forming two tubercles on the summit; hinder part of abdomen wavy, with a broad line of grayish-white hair, extending to the spinnerets; other parts clothed with castaneous-brown and grayish-white hairs, under surface light,



with a dark crescent-shaped mark, extending across the abdomen, between spinnerets and epigyne. The epigyne has a short stylus.

Ceph., 5 mm. long, 4.8 mm. broad.

Abd., 8.5 " " 10 " "

|         |     |     |   |     |     |   |   |     |   |     |     |   |      |     |
|---------|-----|-----|---|-----|-----|---|---|-----|---|-----|-----|---|------|-----|
| Legs—1— | 2   | mm. | — | 4.5 | mm. | — | 6 | mm. | — | 5.5 | mm. | = | 18   | mm. |
| 2—      | 2   | "   | — | 4.5 | "   | — | 6 | "   | — | 5.5 | "   | = | 18   | "   |
| 3—      | 1.5 | "   | — | 3.7 | "   | — | 3 | "   | — | 3.5 | "   | = | 11.7 | "   |
| 4—      | 1.7 | "   | — | 5.5 | "   | — | 6 | "   | — | 6   | "   | = | 19.2 | "   |

Type in Queensland Museum.

Loc.: Stafford-on-Kedron.

## FAMILY PISAURIDÆ.

### GROUP DOLOMEDEÆ.

#### DOLOMEDES TRUX nov. sp.

Cephalothorax reddish-brown, nearly as broad as long, and shorter than the metatarsi of the first pair, cephalic part convex, declivent posteriorly, its sides emarginate in front of the eye, its apex truncate; thoracic part convex as to its intramarginal area, divided into lobes by the sulcus and radiating striæ, posteriorly sloping abruptly to the pedicle, the rather tumid margins, obsolete posteriorly, and fringed with long erect hairs. Eyes unequal, in

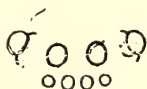


Fig. 4.—EYES OF DOLOMEDES TRUX nov. sp.

About three times the natural size.

two recurved lines, the anterior curve slight, the posterior much stronger; the anterior eyes small, the median ones larger than the laterals, and nearer to them than to each other; median posterior eyes nearer to each other than to the laterals, which are a little larger, suboval, and set on a low mammiform tubercle. Legs brown, upper surface of femurs spotted and barred with dark brown, relative length 4, 1, 2, 3; but with little difference between the

first and the second pairs; all the legs are scantily furnished with hair on the femurs and tibiae, profusely on the distal joints, the femurs, tibiae and metatarsi are armed with a few rows of strong spines; on each tarsus three claws, the two superior with a comb of six straight teeth diminishing in size proximad, inferior claw with one long curved tooth; patellas long. Clypeus longer than broad, more than thrice as broad as the diameter of an anterior median eye. Labium scarcely half as long as the maxillary plates, oblong, with nearly parallel sides, apex truncate. Maxillary plates slender at the base, and rapidly enlarging with an inward curve into a lobe which is rounded on its outer superior side, and truncated obliquely on its inner. Chelæ dark reddish-brown, long, narrowly cylindrical, armed with four strong teeth on the inferior margin, and one strong and two minute on the superior; a glabrous red spot on the base of the outer superior side, clothed with long bristles.

Sternum small, oval, plane; its edges deeply emarginate opposite each coxal insertion, and densely clothed with adpressed and erect bristles. Abdomen brown, elongate-ovoid, as long as the femur of the first pair, rounded and tumid in front, moderately convex above and below, the sides expanding to a breadth equalling nearly two-thirds of its length, then converging to a blunt point; pedicle with the superior lorum simple, continuous, slightly emarginate, laterally; inferior lorum with a short projection from the cephalothorax, truncated at its free extremity. Spinnerets terminal beneath the anal tubercle; the superior pair longer than the inferior, both with a rounded mammillary apex.

Female.—Ceph., 12 mm. long, 10 mm. broad.

|       |     | Abd., 17 " " 11 " " |            |             |                   |
|-------|-----|---------------------|------------|-------------|-------------------|
|       |     | Coxa.               | Tr. & Fem. | Pat. & Tib. | Met. & Tars.      |
| Legs— | 1 — | 4.5 mm              | — 18 mm    | — 21 mm     | — 27 mm = 70.5 mm |
|       | 2 — | 4 "                 | — 18 "     | — 21 "      | — 27 " = 70 "     |
|       | 3 — | 3.5 "               | — 17 "     | — 18 "      | — 24.5 " = 63 "   |
|       | 4 — | 4.5 "               | — 20.5 "   | — 21 "      | — 31 " = 77 "     |

Type in Queensland Museum.

Loc.: Ithaca Creek, Brisbane.

This spider was taken in the act of attacking an adult Tree Frog—a species of *Hyla* which also appears to have previously escaped discovery, and which is described in the earlier portion of these Annals.

# PROTEOCEPHALUS GALLARDI.

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## A NEW CESTODE FROM THE BLACK SNAKE.

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By T. HARVEY JOHNSTON, M.A., D.Sc.

Biological Department, University, Brisbane.

THE Black Snake, *Pseudechis porphyriacus*, Shaw, is not infrequently the host of a number of species of parasites, amongst them being a hæmogregarine, *Hæmogregarina pseudechis*, Instn.,\* found in the red-blood corpuscles; a pentastome, *Porocephalus teretiusculus*, Baird,† infesting the lungs; a nematode, *Physaloptera* sp., which lives in the stomach and duodenum; *Echinorhynchus* sp.,‡ found very commonly in the rectum; and a tapeworm previously recorded as *Ichthyotænia* sp.,§ and now described as *Proteocephalus gallardi*.

Hall || has recently shown that the generic name *Proteocephalus* has priority over *Ichthyotænia*; consequently I have adopted the former designation in preference to the latter, though it is under *Ichthyotænia* that practically all of the species have been placed.

I have examined specimens of this cestode collected from the abovenamed snake in various parts of New South Wales and Victoria. The longest individual measures 40 cm. in length, its maximum breadth reaching 1.7 mm. Its anterior third is white, the remainder being yellowish with a dark-grey dendritic figure in each segment, the marking being due to the colour and form of the egg-laden uterus showing through the overlying tissues. The posterior third of this strobila contained ripe eggs, the eggs in the

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\* Johnston, Proc. Linn. Soc. N. S. Wales xxxiv, 1909, p. 406 (N.S.W.)

† Spencer, Q.J.M.S. xxxiv, 1892-3, p. 1, etc. (Vict. and King Is.); Proc. Roy. Soc. Vict. i (n.s.) 1888, p. 110 (King Is.)

Shiple, Arch. d. Parasitol. i 1898, p. 77.

Johnston, Jour. Proc. Roy. Soc. N.S.W. 1910, p. xvii. (N.S.W.)

‡ Johnston, Proc. Linn. Soc. N. S. Wales 1909, p. 590 (N.S.W.)

§ Johnston, Jour. Proc. Roy. Soc. N. S. Wales 1910, p. xi (N.S.W., Vict.), and p. xviii (Victoria).

|| Hall, Proc. U. S. Nat. Museum xxxix, 1910, p. 146-8.

middle third being more or less immature. In another specimen of 10 cm. in length, ripe eggs were present in the latter portion of the chain.

The scolex is relatively broad (0.96 mm.) but is not marked off from the succeeding portion of the strobila. Its apex projects more or less prominently. In Fig. 1 it is a low cone, while in one case it was seen as a distinct rostellar-like structure. A retractile rostellum is absent. At the tip of the apex there is an apical sucker or perhaps more correctly an apical muscle-plug, there being a very small terminal cavity. This plug is not a powerful organ when compared with the four large suckers, which are very efficient organs of fixation. The latter measure about 0.44 mm. in transverse diameter, the deep cup-like cavity being directed almost anteriorly. There is a longitudinal furrow between each pair. The cuticle of the scolex, and especially its apex, bear abundance of minute backwardly directed and closely set bristles or spines similar to those found in many species of *Ichthyotania* (i.e., *Proteocephalus*). They are also present in the suckers. These tiny projections become gradually smaller in the succeeding portions of the chain, but are still recognisable in segments which have reached sexual maturity, though they are then very minute.

The scolex becomes gradually narrowed into a relatively long unsegmented neck. At about 8 mm. from the anterior end segmentation becomes recognisable by the development of transverse septa. There is no overlapping of proglottids, and, excepting in the case of ripe segments, segmentation is scarcely if at all visible to the naked eye, owing to the absence of marginal indentations in the anterior portions of the chain. Each segment is typically rectangular, the whole strobila very much resembling a narrow flat band. Ripe proglottids vary somewhat in size, being from 4.3 to 5.25 mm. in length by 1.0 to 1.2 mm. in width.

*Musculature, &c.*—The cuticle is a very thick layer (0.017 mm.) showing a distinct stratification, an outer more deeply staining layer, and an inner clearer and rather wider zone. Below it is a definite basement membrane succeeded by a well-defined layer of subcuticular circular muscle fibres. Immediately within these is the outer subcuticular longitudinal musculature, the fibres of

which though individually small are yet very numerous, and form a distinct and almost continuous narrow layer. The subcuticular cells are situated inwardly from these fibres, and between the cells one may readily recognise the inner series of subcuticular longitudinal muscles. The fibres are much larger and form small bundles. This series merges into another lying within it, and consisting of much larger bundles composed of larger fibres. The latter musculature spreads over a fairly wide area of the cortex lying within the subcuticular cells, and terminates at some little distance from the inner parenchyma muscles. They thus represent an outer series of longitudinal bundles. Separated externally from this by a narrow track free from muscular tissue, there lies the powerful inner longitudinal series consisting of numerous bundles varying in size and in the number of individual fibres contained in them. Although one may recognise an inner and an outer division in the middle region of this series, yet they really form one continuous ring. It is this musculature which makes the inner boundary of the cortex, as no transverse fibres were detected within it, though some were present, weakly developed, on the outer side of it. The relation of certain other structures to this longitudinal muscle ring may be mentioned here. The lateral nerve lies in line with or slightly outward from the lateral portion of the system, the vitelline glands being just dorsal to the nerve, both structures thus forming a part of the ring, as will be seen by glancing at Fig. 3. The excretory vessels lie very close to and sometimes actually between the bundles of their respective surfaces. There is no marked displacement of the bundles laterally by the genital ducts as they pass between them. Dorso-ventral fibres were not recognised.

The excretory system consists of the usual two pairs of longitudinal vessels; but transverse commissures are absent. The ventral trunk is somewhat larger than the dorsal, which lies directly above it. Each approaches very closely to the muscle bundles of the corresponding surface. The nerve lies laterally immediately below the vitellaria, and as previously mentioned is situated just outside of the inner musculature. The genital canals displace the nerve slightly towards the dorsal surface as they



pass below it. Calcareous corpuscles were not seen. The cortex occupies a much greater portion of the section than does the medulla.

*Genitalia*.—The genitalia alternate irregularly. The pore is located on a very slightly projecting papilla immediately in front of the middle of the edge of the segment. The common cloaca is very shallow, the male aperture more frequently being placed just posteriorly to the female pore. However, the reverse position of the opening is not uncommon. Both are on practically the same dorso-ventral level, the vaginal orifice being sometimes slightly more dorsally situated than the male pore. The sex ducts lie close together in their outer portions, both passing between the excretory vessels and below the lateral nerve and the vitellaria of the corresponding side.

The male glands are scattered to form two extensive testicular fields extending from near the anterior edge of the segment to the ovarian lobes, separated along the middle of the segment by a rather wide interval in which lies the uterus. Each field contains between 36 and 40 vesicles arranged more or less in a single row, though all the glands do not by any means stand at the same level. Their arrangement in the parenchyma is figured in the transverse section in Fig. 3. It will be seen that they occupy a considerable portion of the medulla, and are as a whole almost equidistant from either surface. It was therefore a matter of some difficulty to fix the surfaces as dorsal and ventral respectively. This difficulty was increased by the absence of transverse excretory vessels by which one might identify the ventral vessels, and by the position of the ovarian lobes, which are placed on the same level as the testes. However, the ovarian bridge very closely approaches the opposite surface, which I have accordingly designated the ventral. The testes are about 0.05 mm. in diameter in surface view, their transverse (*i.e.*, dorso-ventral) diameter being greater, reaching 0.082 mm. These glands are practically absent in the region of the genital ducts. The vas deferens is a closely coiled wide tube lying at about the middle of the testicular field on that side of the segment which bears the genital pore. It frequently extends inwards as far as the mid-line, lying dorsally to the uterus. During sexual maturity the coils occupy in transverse section most of the

mid-region of the medulla. The vas is dorsal to the vagina, which passes under it on its way inwards and backwards from the female pore to the ovary. Just before entering the cirrus sac the coils become less numerous, and the vas now passes below the vagina as a narrow tube. Within the sac it becomes considerably coiled and widened again to act as a vesicula seminalis, the coils lying in the inner half of the sac. The eversible portion or cirrus lies introverted within the outer half of the sac, and possesses powerful longitudinal and circular muscles in its wall. The cirrus sac is an elliptical structure with rather weak muscular walls. The whole organ closely resembles that of *P. coryphicephala* (Montic.).\* As already mentioned, the sac lies ventrally to the nerve and the vitelline glands. It also usually lies ventrally and parallel to the vagina. The cirrus was seen in a state of eversion only in a few transverse sections, where it appeared as a projection 0.086 mm. long by 0.020 mm. wide. No armature was recognised.

The female glands possess the general characters present in other members of the genus. The ovary is a wide bilobed organ of 0.5 mm. in breadth, situated at the posterior end of the segment and extending from the excretory vessels of the one side to those of the other. Each wing is only slightly divided up into ovarian tubes. There is a very narrow bridge connecting the lateral portions, each lobe being situated dorso-laterally in the medulla while the bridge lies quite ventrally, just above the ventral inner longitudinal muscle series. From the middle of the bridge there passes backwards a narrow slightly coiled oviduct which eventually enters the fertilising duct just after the latter penetrates the shell-gland. There is a well-marked swallowing apparatus present on the commencement of the oviduct just behind the ovarian bridge. The oviduct forms a loop, passing forwards and somewhat dorsally to meet the fertilising duct just behind the middle of the ovary. This duct then passes on dorsally to penetrate the shell-gland complex, which lies just behind and dorsally to the ovarian bridge.

The vitellarium consists of a great number of tiny follicles averaging 0.020 mm., and arranged in a longitudinal row in the cortex along each side of the segment, just externally to the main longitudinal musculature and immediately above the nerves. The

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\* Monticelli, Boll. Soc. Nat. Napoli. Ser. 1, 1891, v, p. 161, etc., and fig. 29.

genital canals pass out ventrally below them. At the posterior end of each row there comes off a delicate vitello-duct which travels inwards between the excretory vessels and downwards so as to pass below the ovarian lobes. The two ducts unite just below and behind the middle of the ovarian bridge to give rise to a short and rather wider common duct which passes directly dorsally to enter the shell-gland complex.

From the female pore the wide vagina passes inwards parallel with and dorsally to the cirrus sac. As already mentioned, this duct rather more frequently lies in front of the male duct. In the outer portion of its course its walls are covered by a layer of deeply staining gland cells similar to those figured by Kraemer\* in *P. flicollis*. It passes round close behind the sac crossing dorsally above the vas deferens, which is here very narrow, and then trends inwards and backwards, forming a curve which lies just below the mid-dorso-ventral level and below the main mass of the wide coiled vas deferens. On reaching the mid-line of the segment it travels backwards above the uterus towards the ovary, which it crosses dorsally. Just in front of and behind the ovarian bridge the vagina becomes thrown into a number of loose coils, this portion possessing a rather wider lumen than the more anterior part, and acting as a sperm reservoir. In mature segments there may be readily recognised, lying just behind the ovary, a coiled mass, the constituent parts of which can only be worked out by a careful study of serial sections. The details of the oviduct, vitelline duct, and shell-gland have already been mentioned. The vagina becomes narrowed to form the fertilising duct, which passes dorsally to enter the shell-gland very soon after taking up the oviduct. As stated previously, the common vitelline duct enters the fertilising canal within the shell complex. The uterus travels forwards from the latter as a narrow tube, rising dorsally above the ovary and the vagina, very soon bending ventrally, passing to one side of the vagina and coming to lie just below the inner longitudinal musculature. It then extends forwards along the mid-line, its rounded extremity lying near the anterior border of the segment. The uterus is at first a long, narrow, simple sac, but short lateral diverticula soon appear, these increasing in size as egg formation progresses. As the cavity increases the male and female glands

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\* Kraemer, Zeitschr. f. wiss. Zool. liii, 1892, p. 647-722.

become more or less displaced and soon atrophy, the testes being the first to disappear. The mature organ consists of a rather long, narrow, median trunk with extensive lateral cavities arranged more or less at right angles to it, the appearance being somewhat like that found in the genus *Tænia sensu stricto*. The lateral pouches are not subdivided. Sometimes the uterus becomes so densely packed with eggs that one cannot recognise the presence of pouches, the organ then resembling a large simple sac such as is found in *Dilepis* and allied Tæniad genera. The eggs are spherical, possessing two shells, the diameter of the outer being 0.039 mm., that of the inner, which closely invests the embryo, being 0.0156 mm. The embryonal hooklets measure 0.0084 mm. in length.

The only other species of *Proteocephalus* known from Australia are *P. tidswelli*, Johnston,\* taken from the monitor lizard *Varanus varius*, Shaw, in different parts of New South Wales, and *Proteocephalus* sp. (recorded as *Ichthyotænia* sp.)† from the copper-headed snake *Denisonia superba*, also from that State. Two forms were described from *Varanus* sp., from New Guinea, by Ratz,‡ under *Ichthyotænia*—viz., *P. biroi* and *P. saccifera*. All three described forms, as well as *P. gallardi*, come under the subgenus *Acanthotænia*.§

Linstow,|| in 1907, in describing *P. pigmentata* (*I. pigmentata*, Linst.), from the intestine of *Psammodynastes pulverulentus*, Fisch., gives a list of the Tæniad cestodes known from snakes, remarking that nearly all of them belong to the genus *Ichthyotænia*. Schwarz¶ has recently published a paper on the Ichthyotæniæ of reptiles, in which he enumerates the known species, and offers observations on the anatomy of some of the species. The life history of members of the group is not known, though Barbieri\*\* regards it as being very probable that the plerocercoid stage of the various species infesting Teleosteans occurs in certain crustacea such as *Leptodora* and *Bythotrephes*.

\* Johnston, Jour. Proc. Roy. Soc. N.S.W. xliii, 1909, p. 103-116.

† Johnston, *Ibid.* 1910, p. xviii.

‡ Ratz, C. R. Soc. Biol. lii, 1900, p. 980-1; Centr. f. Bakt. xxviii, 1900, p. 657-660.

§ Johnston, Jour. Proc. Roy. Soc. N. S. Wales 1910, p. 114-5.

|| Linstow, Notes from the Leyden Museum, xxix, 1907, p. 85-6.

¶ Schwarz, Die Ichthyotæniën der Reptilien, etc. Inaug. Diss. Basel. 1908, p. 1-52; Ref. in Zoolog. Zentralb. xvi, Dec. 1909, p. 801.

\*\* Barbieri, Centr. f. Bakt. Orig. I., xlix, 1909, p. 334-341.

The type slide of *P. gallardi* has been deposited in the Queensland Museum, Brisbane. The material was collected by Messrs. L. Gallard (Gosford district, N.S.W.); C. T. Musson (Richmond, N.S.W.); F. H. Taylor and W. Hall (Hunter River, N.S.W.); A. S. Le Souef (Gippsland, Victoria); and by myself on several occasions from black snakes caught in the vicinity of Sydney.

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## MUSEUM NOTES.

### CHEILIO INERMIS (Forsk.).

Some months ago the Queensland Museum became possessed of a fine example of this fish from Moreton Bay, which constitutes a record, not only for Queensland, but also for Australia, the species not being included in Macleay's Catalogue, nor mentioned by Kent in his "Great Barrier Reef." During the first week in March, no less than four of these fishes were sent to the Brisbane Market from Southport, three of which were secured for the Museum, which now, so far as I know, holds all the known Australian specimens.—J.D.O.

## THE SKERTCHLY LOAN COLLECTION.

### (ANTHROPOLOGICAL.)

This collection, quite recently acquired by the Queensland Museum, consists of the most interesting of the Anthropological specimens obtained by Prof. Sydney B. J. Skertchly since about the year 1862, and includes not only his more important finds in Europe, Asia, and America, but some unique specimens bequeathed to him by the late veteran geologist, Mr. Alfred Tylor, and others given to him by Dr. E. B. Tylor, D.C.L., F.R.S., who is happily still with us (1911).

It may be divided into sections:—

1. *Recent*.—Comprising fire-making apparatus, and stone implements.
2. *Prehistoric*.—Implements belonging to dying or recently extinct races or tribes.
3. *Neolithic*.
4. *Palæolithic* and *Eolithic*.

The first three (and possibly four) shade into each other chronologically. A few of the specimens, illustrating the groups, are as under :—

#### I.—RECENT.

*English Tinder Box*, Wisbech, Cambridgeshire. Obtained for the exhibitor by the mother of the present Lord Peckover in 1873. She, an old lady of seventy, as a child had command of the family tinder-box, and kindly made the tinder and matches included in the exhibit.

*Modern Flint and Steel* apparatus still in use in China and the Moluccas. Modern Dyak (Borneo) *Fire-drills* and *Fire-saws*. The remarkable *Fire-syringe* of the Dyaks, first described by Pigafetta in his description of Vasco de Gamai's voyage round the world; but never obtained and described till the exhibitor's travels in Borneo. (See Journ. Anthropol. Inst., 1890.)

Four arrow and spear heads, two Californian, two Australian. These demonstrate the readiness with which the savage recognises material, whether natural or artificial, which is suitable for "flaking"—i.e., fashioning into tools. The American pair were made by the surviving remnant of the Red Cloud Indians, residing south of Mount Shasta, California. One is made from natural glass (Obsidian), one from artificial glass (hock bottle); so the Australian recognised the worth of glass and porcelain obtained by the natives of the Cambridge Gulf from the insulators on the Transcontinental Telegraph Line. Samples of thin stone tools are shown. Among other stone implements shown is one of the musket flints (French) captured.

#### II.—PREHISTORIC.

Typical stone and obsidian implements from Canada, Colorado, California, Mexico; bronze implements from Mexico and China. The Mexican specimens were collected by Dr. E. B. Tylor in 1856. (See his "Anahuac.") The Californian specimens are from graves of an extinct Indian tribe in Southern California, and include a fine necklace of recent Pacific shells. Some of the Colorado arrow heads are of great delicacy.

#### III.—NEOLITHIC.

The Neolithic implements include *Flakes*, *Scrapers*, *Strike-a-lights*, *Arrow heads*, *Celts*, &c. A *Necklace of Fossil Sponge* (*Coscino-*

*pora*) belonging to the Upper Chalk formation, from a tumulus near Brandon, Suffolk, is almost unique. Some of the stone celts are from A. Tylor's collection, and belong to the original discovery of Lake Dwellings, in the Swiss Lakes. The series of scrapers, hammer-stones, &c., were selected chiefly to illustrate the modes of working flint. (*See* the exhibitor's official "History of Gunflints, &c.")

#### IV.—PALÆOLITHIC.

The Palæolithic implements, all of flint, are particularly fine and interesting in several ways. They include specimens of the original find at *Abbeville*, France, and are consequently some of the first recognised older stone-age implements. The rest are of the exhibitor's own finding in Norfolk, Suffolk, &c., and one is the finest example from the beds named by him, "Brandon Beds," which are undoubtedly older than the close of the glacial period.

#### V.—EOLITHIC.

Two crude flint implements from Suffolk, which would now be classed as Eolithic. The exhibitor believes them to be merely the cruder forms, perhaps only slightly trimmed for temporary use, and does not see any reason to consider them older than the ordinary Palæolithic forms.

The collection also contains the only two stone implements yet known from Borneo, but the exhibitor (who found them) could get no geological proof of their age. He believes they may be older than the introduction of iron into Borneo, say before A.D. 1000.





A WILD DOG FROM BRITISH NEW GUINEA.

*A. McLaren, Del.*





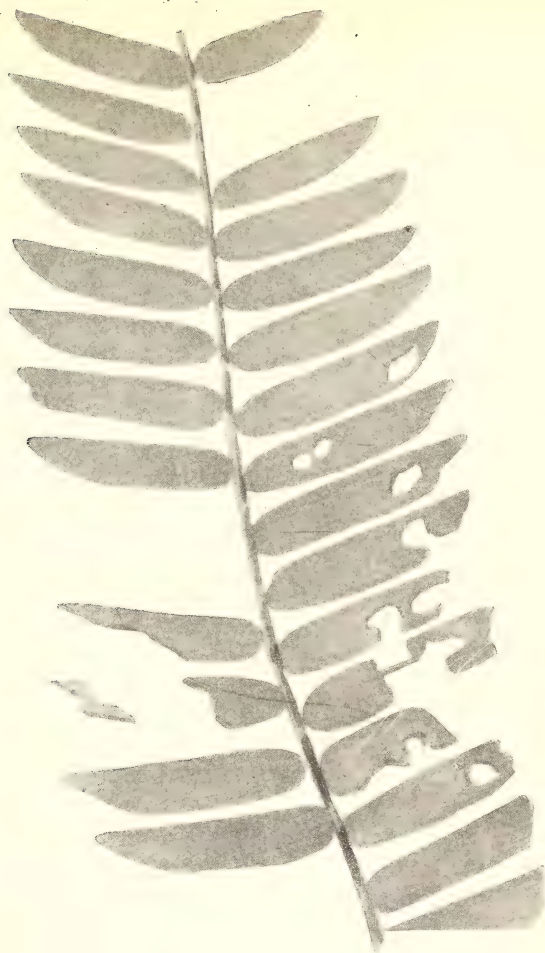


Fig. 1 (Natural Size).



Fig. 2

PTEROPHYLLUM MUCRONATUM, n.s.

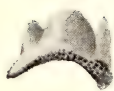


Fig. 3.

HYBODUS INCUSSIDENS.



Fig. 4.



Fig. 5.

PALÆOLESTES GOREI, n.s.



Fig. 6.

(All Natural Size.)





Fig. 1.—NOTOCHELONE COSTATA (Ow.). (Natural Size.)

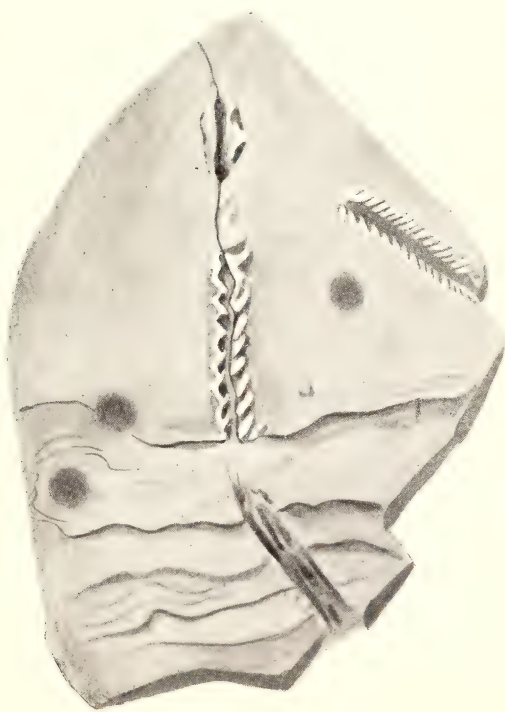
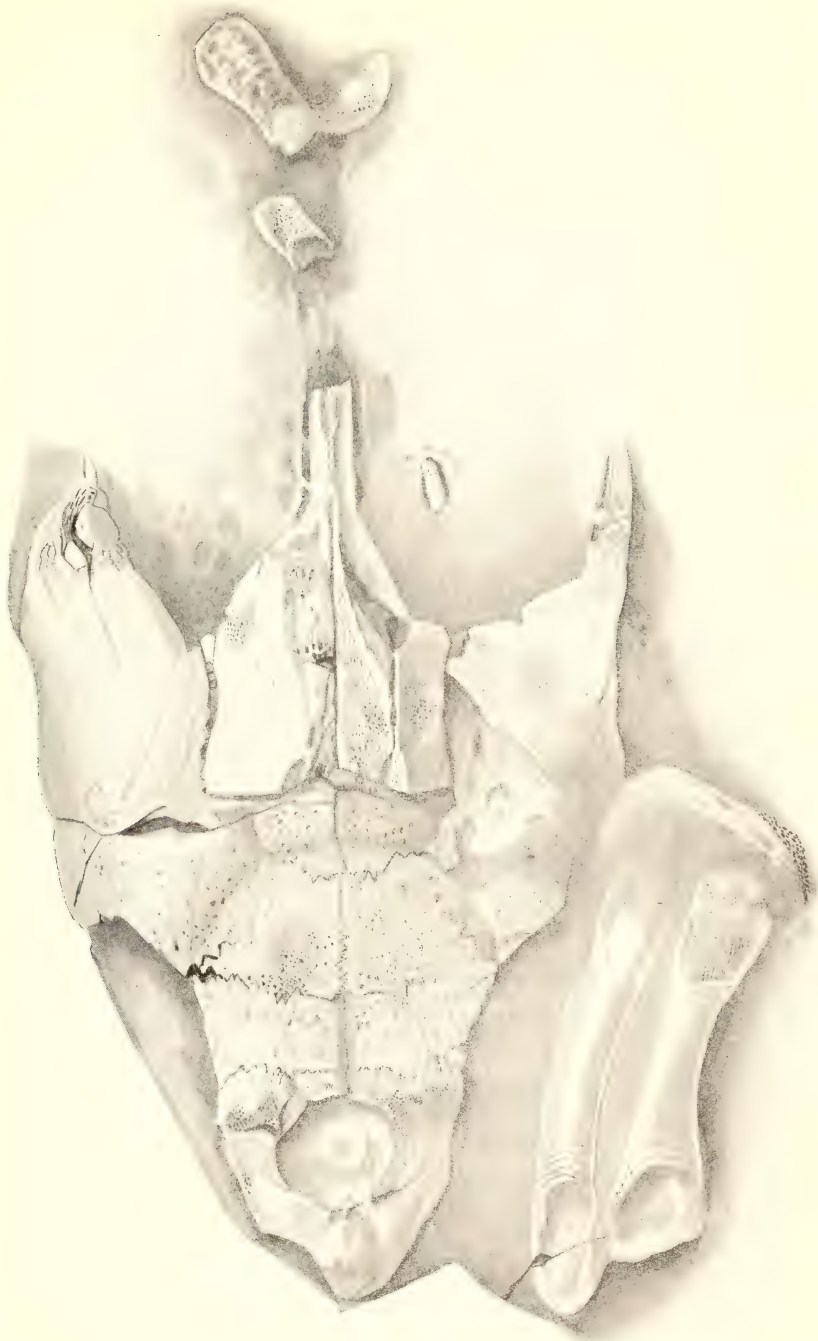


Fig. 2.—ANNELID TRAILS. (Natural Size.)







NOTOCHELONE COSTATA (OWEN).

(Two-thirds of Natural Size.)



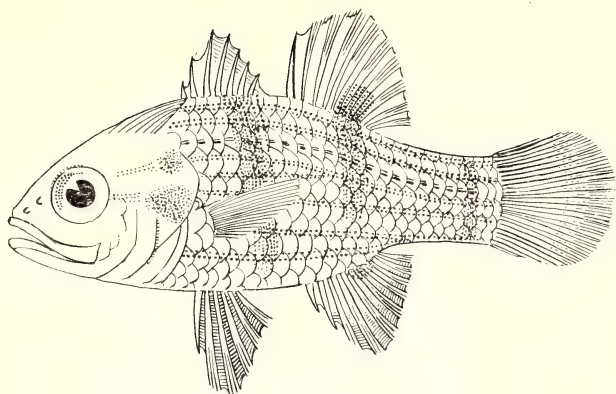


FIG. 1.—AMIA BERTHÆ OGILBY.  
(Natural Size.)

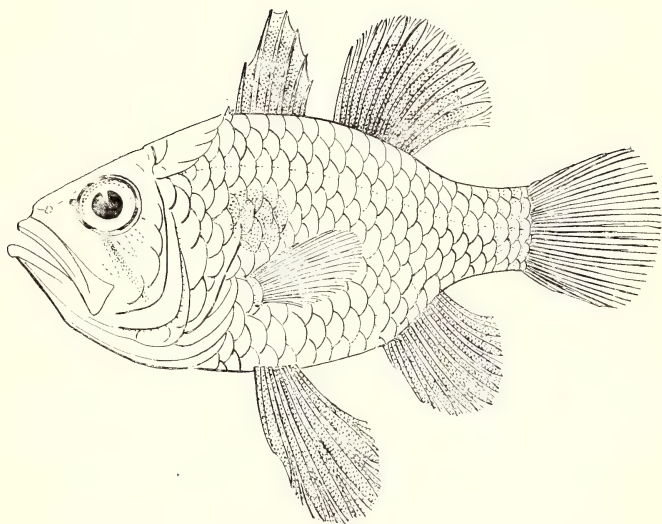


FIG. 2.—AMIA NIGRIPES OGILBY.  
(Natural Size.)



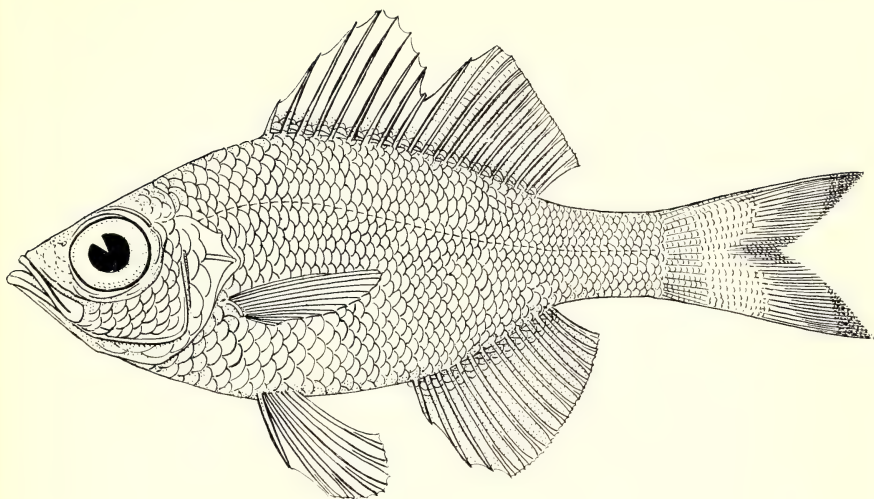


Fig. 1.—*KUHLIA HUMILIS* (DE VIS).  
(Natural Size)

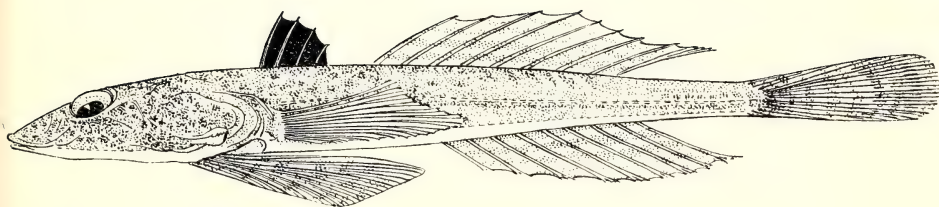
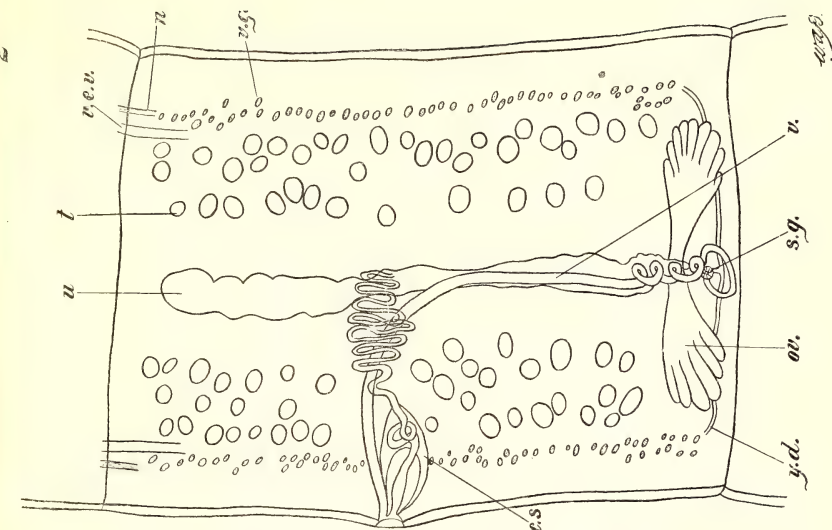


FIG. 2.—*CALLIONYMUS MACDONALDI* OGILBY.  
(Natural Size.)

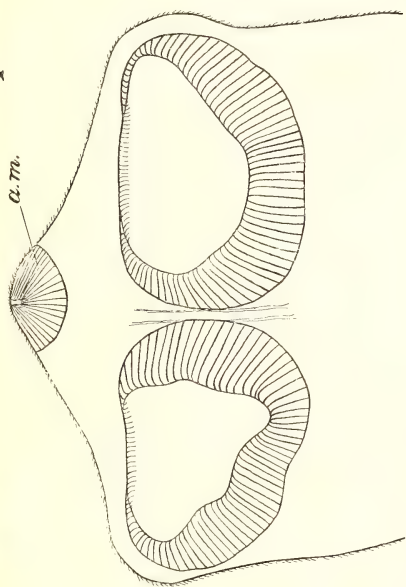




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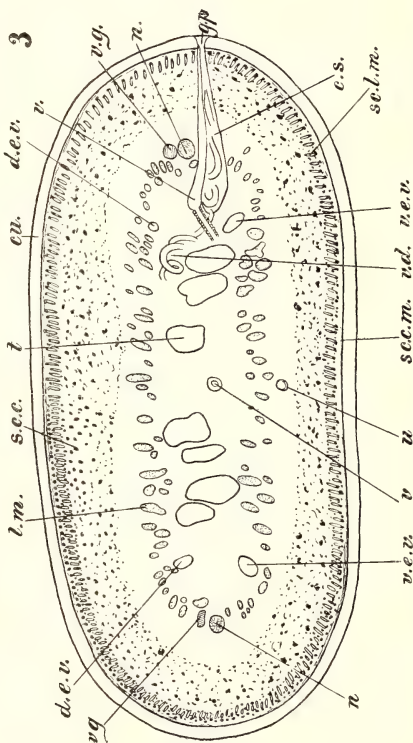


Fig. 1. Scolex. Fig. 2. Sexually mature segment. Fig. 3. Transverse section of segment approaching maturity.

References to lettering: — *a.m.*, apical muscle; *cu.*, cirrus; *c.s.*, cirrus sac; *d.e.v.*, dorsal excretory vessel; *g.p.*, genital papilla; *l.m.*, longitudinal musculature; *n.*, longitudinal nerve; *ot.*, ovary; *s.c.c.*, subcuticular cells; *s.c.m.*, subcuticular circular muscle; *s.c.l.m.*, subcuticular longitudinal musculature; *s.g.*, shell gland; *t.*, testis; *u.*, uterus; *v.*, vagina; *v.d.*, vas deferens; *v.e.v.*, ventral excretory vessel; *v.*, vagina.



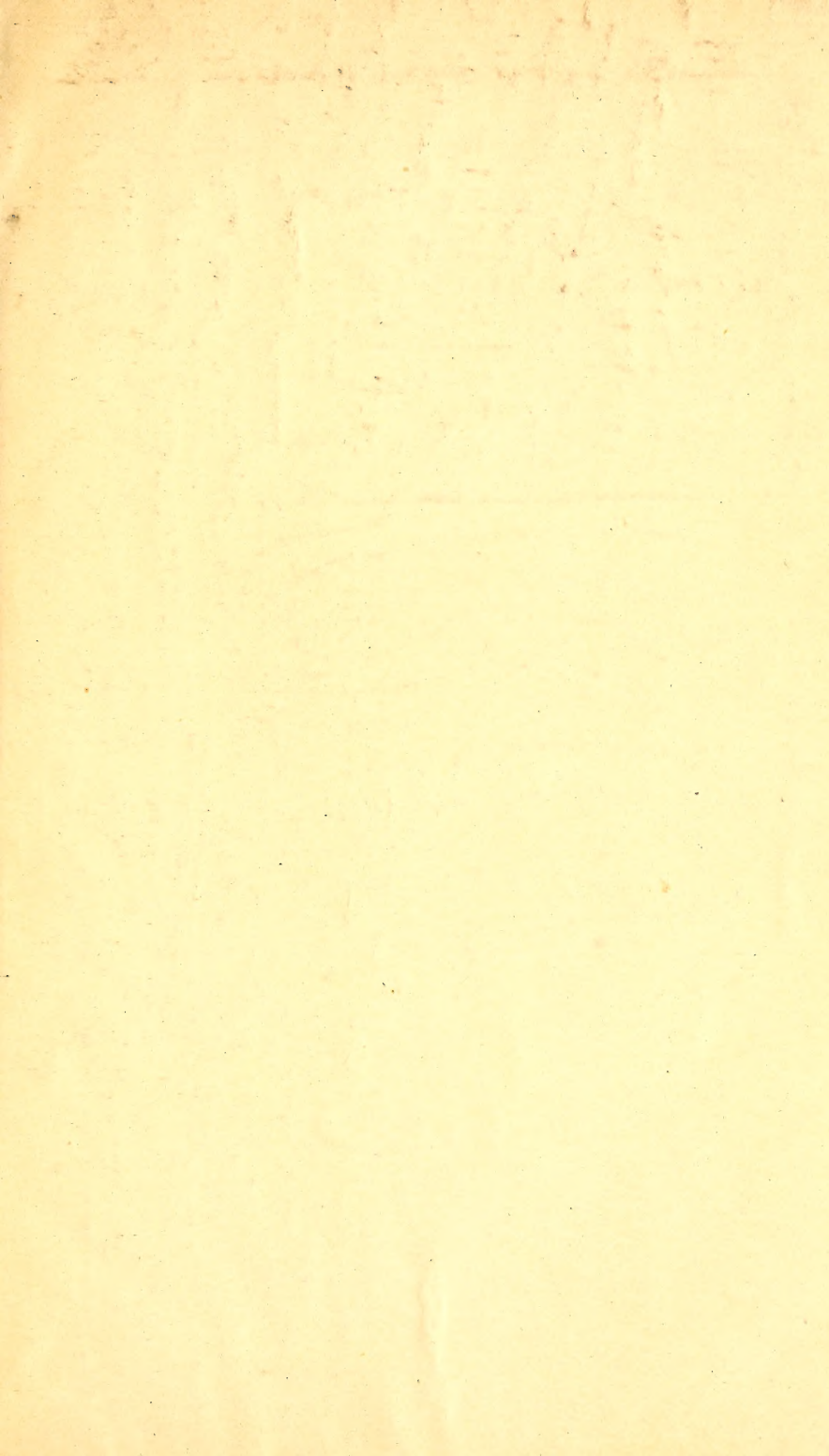




















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